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DEEP INFECTIONS OF THE NECK

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Deep cervical fascia not only covers the soft parts of the neck collectively but, by its inflections, forms separate sheaths for the muscles, vessels and glands. It isolates them and keeps them in their proper relative positions.

A lengthy description of its numerous layers would be not only extremely tedious but unintelligible without considerable knowledge of the anatomy of the neck. These fascial planes have been minutely described by Mosher,[1] Barnhill,[2] Furstenberg,[3] Hall,[4] Grodinsky,[5] Blassingame,[6] Lore,[7] Iglauer [8] and others, and for those interested these articles should be read in detail. Recently, however, there has been a tendency by some authors to split these fascial planes into two or more layers, subdividing the various compartments. For instance, Pons-Tortella and Broggi-Valles [9] classify the spaces in the neck under six main divisions, and then these divisions are further divided into fourteen subdivisions.

MacEwen and Scheldrup,[10] in reviewing the anatomy of the neck, speak of the muscular, visceral and fascial compartments and the major areolar spaces and major vessels.

Weintraub [11] in his summary on "A New Interpretation of Connective Tissues of the Neck" states that:

> The traditional description of the neck connective tissue as "cervical fascia" and "carotid sheath" is shown to be inadequate and in part erroneous. A systemized division of the neck connective tissues into nerve vessel supporting connective tissue (nerve vessel bundle and nerve vessel sheath), periorgan connective tissue, and areolar tissue spaces is introduced, with both anatomic and functional significance. Several new spaces in the neck are described, including the very important peripharyngeal spaces.

With all this, it seems to me, the anatomy of the subject is made far more complicated than it actually is. Anatomically these authors may be right, but from a clinical and surgical point of view these fascial planes are very much fused and confused when evacuation of pus deep in the neck is dealt with, and for that reason one should have a general anatomic knowledge of these planes and try and find them surgically when dealing with deep infections. A correct knowledge of the attachments of the principal layers of the cervical fascia is essential to a complete understanding of the course which pus takes when it forms in the neck. If it is sealed under the superficial layer (which is attached to the clavicle), it may burrow beneath the clavicle into the axillary. But if it is sealed beneath the deep layer (which is attached to the first rib), then it becomes more serious, since the pus may travel through the loose tissues by the side of the pharynx and make its way into the chest.

Mosher [1] states that:

> The cervical fasciae are both very real and very unreal. Admitting, of course, that they can be divided as they are in the anatomies, there is a much more simple and more practical way of considering them. The purpose of the fasciae is to keep everything in the neck snugly in its allotted place. To me, the fasciae are but prolongations or offshoots of the carotid sheath. This conception of the carotid sheath and the cervical fasciae makes the sheath the core of the soft structures of the neck. Such in surgery it is. In other words, in hunting for pus deep in the neck, find the carotid sheath and follow it. It is the natural highway for pus and for the surgeon in pursuit of pus.

THE ANATOMY AS APPLIED TO DEEP INFECTIONS OF THE NECK

In the median line of the neck, beginning at the chin, there are (1) digastric muscles, (2) the raphe junction of mylohyoid muscles, (3) the hyoid bone, (4) the thyrohyoid membrane, (5) the thyroid cartilage, (6) the cricoid cartilage connected with the thyrocricoid membrane, (7) the trachea and (8) the thyroid isthmus.

Laterally in the neck there are the sternocleidomastoid muscle, and when I speak of it I associate it with the anterior or posterior approach to pus deep in the neck; also it overlies the deep vessels; the angle of the jaw as the limits of the pharyngomaxillary space and where the submental area meets the front of the neck; the hyoid tip and bone with its associated important vessels, and its muscular attachments; the posterior border of the thyroid cartilage, where one finds the point of greatest tenderness in infections of the buccopharyngeal space.

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1942.

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6. Blassingame, C. D.: Angina Ludovici: An Anatomical and Clinical Study, Tr. Am. Laryng., Rhin. & Otol. Soc. **34:** 32-55, 1928.
7. Lore, J. M.: Symposium: Deep Infections of the Neck, Laryngoscope **49:** 448-470 (June) 1939.
8. Iglauer, Samuel: Anatomic-Pathologic Studies of Retropharyngeal (Peripharyngeal) Abscess, Tr. Am. Laryng. A. **61:** 66-80, 1939.
9. Pons-Tortella, E., and Broggi-Valles, M.: An Anatomical Study of the Cellular Spaces of the Neck, Lyon chir. **35:** 513-539 (Sept.-Oct.) 1938.
10. MacEwen, E. M., and Scheldrup, E. W.: Applied Anatomy of the Neck: Graduate Course, American Academy of Ophthalmology and Otolaryngology, 1939, course no. 326.
11. Weintraub, J.: The Connective Tissues of the Neck—A New Interpretation: Graduate Lecture, American Academy of Ophthalmology and Otolaryngology, 1939, course no. 320.

The Hyoid Bone: Its Muscle Attachments and Their Action.—The sternohyoid draws down the hyoid bone after it has been elevated in swallowing; also fixes the hyoid to allow sucking action by the tongue.

The omohyoid depresses the hyoid and may slightly elevate the scapulas.

The thyrohyoid elevates the thyroid on swallowing.

Fig. 1.—Lateral view of the cervical area showing the bulging forward of the posterior pharyngeal wall encroachhing on the trachea in a retropharyngeal abscess.

The digastric depresses the mandible, but, if the mandible is fixed, it raises the hyoid as in swallowing.

The stylohyoid raises and draws back the hyoid.

The mylohyoid conjointly elevates the hyoid and the floor of the mouth.

The geniohyoid draws the hyoid forward and upward, and if the hyoid is fixed it depresses the mandible.

The hyoglossus depresses the tongue with that of its fellow.

The geniohyoglossus, posterior portion, protrudes the tongue; the anterior portion draws the tongue back again. When every part of the muscle acts, it draws down the entire tongue.

The styloglossus retracts the tongue.

These actions are important to know, for the action or lack of action of these muscles in infection of Ludwig's angina increases respiratory difficulty. Cutting of the mylohyoid, digastric and geniohyoid transversely in the treatment of Ludwig's angina releases the pull on the hyoid and relieves respiratory difficulty.

Paths of Infection for Abscesses of the Neck.—Abscesses of the neck arise chiefly from cervical lymph glands in which are retained infective agents from a regional inflammatory process. The further extension of the pus follows along definite channels, i. e. the connective tissue planes of the cervical fascia, and there are four usual connective paths along which an inflammatory process may extend: (1) superficial, (2) pretracheal, (3) buccopharyngeal, (4) prevertebral.

ETIOLOGY

Of the utmost importance is an accurate and detailed history from the patient, for with definite knowledge of the source and type of infection one is in a better position not only to apply the medical or surgical treatment at the source necessary to a successful termination but to anticipate the pathway of infection.

The type of organism is most important to know so that proper chemotherapy can be instituted as early as possible.

The most frequent source of infection is from the pharyngeal and tonsillar regions, followed by infections of dental origin; other causes are sinusitis, infections of neighboring lymph glands, trauma as a penetrating wound, foreign bodies and an operation around the trachea and larynx. These infections may spread either by lymphatics or directly in the form of cellulitis or by septic thrombophlebitis of some of the veins of the neck—usually the jugular or its tributaries, which might follow any severe throat infection; i. e. tonsillitis, tonsillar or peritonsillar abscess.

DIAGNOSIS

Diagnosis in general naturally depends on the information obtained from an accurate history and from local as well as constitutional manifestations, for only by obtaining this can one expect to find the port of entry of the infection and anticipate its course.

Infections may originate from the teeth or tonsils before, during or after their removal, the parotid gland,

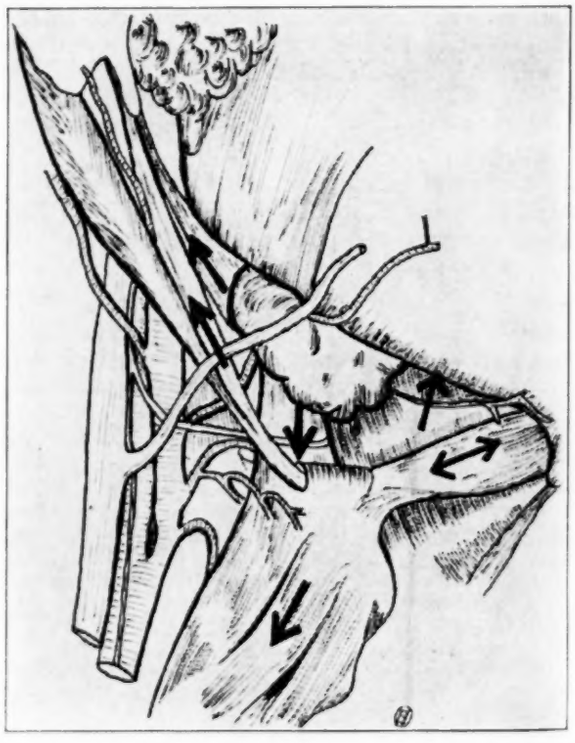

Fig. 2.—Direction of pull of various muscles attached to hyoid bone.

the tongue, the retropharyngeal gland, infected glands, thrombophlebitis or trauma to the cervical esophagus. Abscesses of any of these spaces may rupture into others.

Local manifestations depend on the area infected and will be taken up later under the various regions.

The general manifestations are those of sepsis.

REGIONAL LYMPHADENITIS

Usually regional lymphadenitis follows the acute exanthemas or is secondary to some infection of the upper respiratory tract. Abscesses from infected superficial lymph nodes call for opening of a simple abscess. This type of infection seldom causes deep infection of the neck.

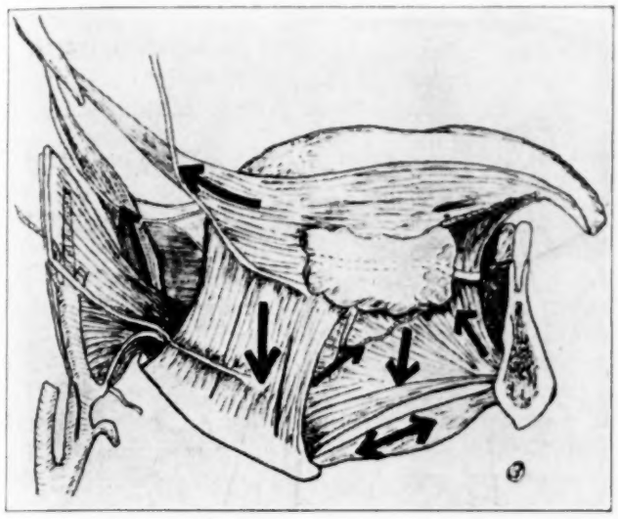

Fig. 3.—Direction of pull of muscles attached to hyoid bone and tongue.

BEZOLD'S ABSCESS

Bezold's abscess is a result of infection in mastoid cells that eroded and opened into the digastric fossa. The treatment here is to clean out the mastoid cells and open the neck by continuation downward of the mastoid incision.

RETROPHARYNGEAL ABSCESS

Retropharyngeal abscess, also known as peripharyngeal abscess, is more common in children under 3 years of age and the infection invades retropharyngeal or peripharyngeal spaces by veins or lymphatic drainage, the latter being more frequent, owing to breaking down of the glands of Henle and Gillette. These abscesses usually follow acute or chronic infection from the nose or nasopharynx or may follow any of the acute fevers. Retropharyngeal abscess may involve the fascia between the visceral and alar fascia, or the space between the alar and the prevertebral fascia.[12] Infection is apt to remain localized at the site of origin but may spread downward through the neck into the superior mediastinum. It may also break into the pharyngomaxillary space, causing possible erosion of the vessels, and it may extend into the submandibular space, resembling Ludwig's angina. A diagnostic point, however, is that Ludwig's angina seldom occurs in children. The onset may be sudden, with rise of temperature, chills and fever, pain on swallowing and talking, bulging of the lateral or pharyngeal wall and respirations becoming slow, accompanied by stridor. Swallowing becomes difficult and there is regurgitation of food in attempting to swallow, and the patient naturally refuses all nourishment.

A lateral roentgenogram of the neck is diagnostic.[13] Here the retropharyngeal abscess and the anatomic site of a peripharyngeal space of Weintraub seems to be the same. Weintraub terms a retropharyngeal space a peripharyngeal space and describes a right and a left peripharyngeal space as separated by a septum.

Treatment requires early and adequate drainage either through the mouth or externally, depending on the condition of the patient and the extent of the abscess. If drainage is made through the mouth, extreme care should be taken in the evacuation of this abscess. The patient should be placed in the Rose position; a suction apparatus should be at hand to prevent aspiration of pus into the lung. General anesthesia is absolutely contraindicated. The mouth should be opened only sufficiently to permit use of the index finger as a guide for a blunt forceps to be pushed through the tissues into the abscess cavity, after which the forceps is withdrawn according to the method of Hilton. It has happened that the use of a mouth gag to open a child's mouth has been sufficient to stop respiration, the patient dying before any surgery was done. When there is a sudden severe hemorrrhage following the opening of the retropharyngeal abscess, ligation of the carotid is the only way to control it. With the external method, the incision is made along the anterior border of the sternomastoid muscle similar to the opening of a buccopharyngeal abscess.

ABSCESS OF THE TONGUE

An abscess of the tongue begins somewhat like Ludwig's angina but not as acutely. There is a history of injury to the tongue with symptoms of infection. The patient has considerable pain in attempting to protrude his tongue, since most of these abscesses are in the posterior portion of the geniohyoglossus muscle (whose action it is to protrude the tongue), permitting the anterior portion to draw the tongue back, thereby causing interference in respiration. The

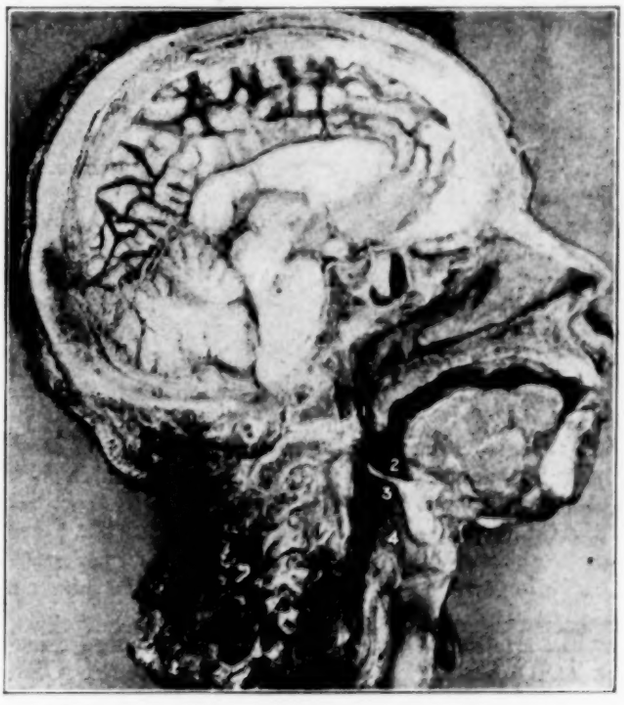

Fig. 4.—Median section of normal adult head: 1, normal space between uvula, soft palate and posterior pharyngeal wall; 2, normal space between base of tongue and epiglottis; 3, epiglottis fairly straight; 4, normal opening of glottis.

12. Proetz, A. W., in discussion on Iglauer and Weintraub, Tr. Am. Laryng. A. **61**: 110, 1939.
13. Richards, L.: Retropharyngeal Abscess: Nasal Air-Way, Rhode Island M. J. **21**: 149-152 (Oct.) 1938.

tongue is thick and swollen posteriorly, interfering with phonation. As this swelling increases it causes difficulty in swallowing and respiration. Unless the abscess is evacuated, death quickly follows by asphyxiation.

Patients with infection of the tissues in the floor of the mouth deep to the submaxillary gland are toxic and extremely ill. In Mosher's submaxillary approach the submaxillary gland is elevated, and with incision of the bed of the submaxillary fossa at right angles to its fibers the pus is readily found and evacuated and the cavity drained.

SUBMAXILLARY INFECTIONS

There is usually given a history of infection from dental origin in cases of submaxillary infections, the vast majority of which follow the extraction of teeth

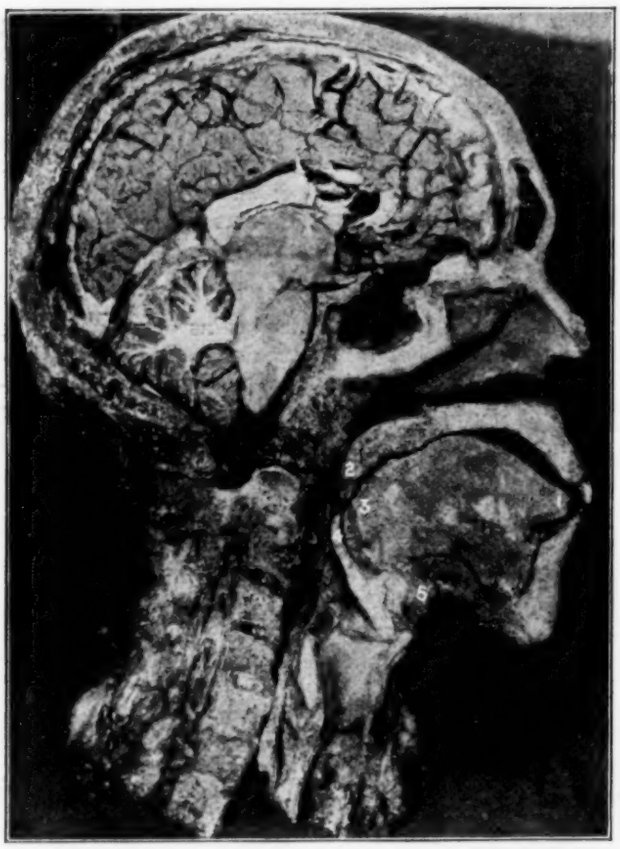

Fig. 5.—Position of structures from compression above hyoid: 1, tongue behind anterior dental arcade; 2, uvula and soft palate pushed backward and upward against posterior pharyngeal wall; 3, base of tongue pushed upward and backward in apposition with soft palate and in apposition with anterior surface of epiglottis; 4, epiglottis pushed backward, posterior surface in apposition with posterior pharyngeal wall; 5, compression above hyoid.

under local anesthesia. The hypodermic needle is an important factor in the cause either by forcing infective material directly into adjacent areas or by breaking down nature's protecting barrier. These infections spread by fascial planes to the sublingual and submaxillary regions and eventually to the pharyngomaxillary spaces, then downward to the mediastinum, death ultimately resulting either from suffocation due to edema of the larynx or from mediastinitis. This is the type of infection that is so frequently seen in hospitals subsequent to dental extractions, the progress of infection extending over a period of days and often being diagnosed as Ludwig's angina. For this type of surgical drainage the best method is the submaxillary approach that has been described by Mosher.

LUDWIG'S ANGINA

I would say that Ludwig's angina is an acute, virulent, diffuse cellulitis of the floor of the mouth following injury from carious teeth to the mucous membrane, permitting the entrance of pathogenic organisms such as streptococci, staphylococci and anaerobic bacteria and often extending to the structures around the larynx and pharynx and sometimes into the cellular tissues of the neck. This is accompanied with constitutional symptoms of chills and a rise in temperature. The patient is acutely ill and has pain in the floor of the mouth—swallowing becoming painful and difficult. The tongue becomes swollen, causing respiration to be labored from crowding backward of the base of the tongue and epiglottis. If one side is involved, the mucous membrane of the floor of the mouth is pushed upward and backward to the opposite side. If both sides are involved, the tongue is pushed upward and backward. There is exquisite tenderness on palpation and a hard mass is felt in the floor of the mouth and under the chin. There is no point of fluctuation, the entire process taking place in a comparatively short time. Tracheotomy is necessary almost at once for dyspnea.

The pull of the hyoid muscles with fixation of some rapidly causes respiratory difficulty, and here the treatment differs somewhat. These muscles, namely the mylohyoid, digastric and geniohyoid muscles, should be cut transversely from the posterior border of the mylohyoid to the chin, if only one side is involved, and should be continued to the posterior border of the mylohyoid on the opposite side if both sides are involved. This relieves the tension and respiratory difficulty. It is radical, but the mortality of Ludwig's angina is high without immediate wide surgical drainage.

PHARYNGOMAXILLARY SPACE (PARAPHARYNGEAL SPACE)

The pharyngomaxillary space is bound above by the base of the skull, internally by the superior constrictor muscle of the pharynx and externally by the internal pterygoid muscle and ramus of the mandible and the inner prolongation of the parotid gland; it extends from the base of the skull downward to about the level of the angle of the jaw. In the posterior compartment of this space are the carotid vessels, and pus in this area can readily find its way down along the "Lincoln Highway" of the neck.

Infection in this fossa may be from the parotid or from the submaxillary gland. Abscess of the parotid gland usually ruptures internally and not externally. Injuries and infections of the pharynx, for instance, tonsils, peritonsillar abscess which has broken through, or lymphatic drainage, or a result of faulty local anesthesia, is often the causative factor of infection in the pharyngomaxillary space. Diagnosis is easily arrived at with a history of infection or injury to the lateral pharynx, of sudden onset, accompanied with chills, a rapid rise in temperature and, on examination of the pharynx, a swelling of the lateral pharyngeal wall, swelling of the uvula, and the soft palate pushed to the opposite side, accompanied by difficulty or inability to open the mouth owing to trismus of the internal pterygoid. A diagnostic distinction between this con-

dition and a peritonsillar abscess is that a patient with a peritonsillar abscess will open his mouth gradually if persisted with, but it does give him pain, while a patient with a parapharyngeal or pharyngomaxillary fossa infection cannot open his mouth because of the trismus of the internal pterygoid muscle.

There have been a number of instances reported by White and Hubert [14] of hemorrhage into the parapharyngeal space due to erosion of the large vessels, and they call attention to the fact that these swellings may frequently be diagnosed as peritonsillar or lateral pharyngeal abscess and may be incised. To know the type of the causative organism in these infections of the pharyngomaxillary fossa is important. A frequent active hemorrhage following peritonsillar abscess does not require much local treatment but bold external procedures. Ill placed incisions in the lateral pharyngeal wall may lead to fatal hemorrhage.

The approach to this area may be internal or external. Internally, in the absence of the tonsil, the incision is made through the mucous membrane, the pharyngeal aponeurosis, the superior constrictor muscle and the buccopharyngeal fascia. Externally, the incision can be made parallel to the lower border of the mandible. The posterior limit of this incision is a point midway between the tip of the mastoid process and the angle of the jaw and extends anteriorly beyond the submaxillary gland. After the superficial layer of the deep cervical fascia has been incised, the remainder of the operation is made by means of blunt dissection. However, with Mosher's T incision in his submaxillary approach, one can reach pus in the pharyngomaxillary fossae, the side of the tongue, the floor of the mouth and the region of the tonsil, and by extending the vertical line of the incision downward along the anterior border of the sternomastoid muscle one can also reach infection in the carotid sheath.

PERIESOPHAGEAL ABSCESS (BUCCOPHARYNGEAL)

The two layers of pretracheal fascia which surround the thyroid gland unite at the posterior border of this gland and pass behind the pharynx and esophagus and are known as the buccopharyngeal fascia. This fascial plane communicates with the posterior mediastinum. Mosher and Jackson have called attention to a weak point in the esophagus at which the inferior constrictor fibers split, which permits a herniation just behind the cricoid cartilage. It is in this area that most of the infections by trauma or by perforation take place, causing the rapid spreading upward and downward in the buccopharyngeal space. Unless this condition is diagnosed early and one has the courage to drain this area immediately, death will usually follow, although one does read occasionally of cases in which drainage has been made successfully from within. Infection in this space may result from sharp pointed foreign bodies that have perforated the esophagus by their presence or by an attempt to remove such foreign bodies, or from external injury such as stab wounds or bullet wounds. Infection of this fossa may also be the result of drainage from the pharyngomaxillary fossa by gravitation. When there is a history of trauma with dysphagia, accompanied by fever, pain and tenderness, with swelling at the root of the neck, with emphysema or crepitation on palpation, one should immediately have a lateral roentgenogram taken. The lateral view of the neck will show a bulging forward of the posterior wall, with the presence of air in the spaces; this is an important early diagnostic sign. One must not be misled by a drop in temperature and a high leukocyte count. Other diagnostic points are the tender spot over the posterior border of the thyroid gland; swelling, with difficulty in swallowing, and signs of emphysema; the only hope of saving the patient is by a cervical drainage of this space and possibly a cervical mediastinotomy.

Periesophageal abscess may be divided into three groups: [15] (1) those due to foreign bodies, (2) those due to perforation by instrumentation and (3) those due to spontaneous rupture.

Once a diagnosis of esophageal perforation is reasonably certain, external drainage is imperative, because

Fig. 6.—Bone in esophagus with air bubble just above.

the danger of the performance of such a procedure is inconsequential as compared with the dangers of progression of the mediastinal infection.

The roentgen findings are of vast importance in the diagnosis of periesophageal abscess infections. As already emphasized, in perforations of the posterior wall of the pharynx and of the esophagus, the visualization of air in the retrovisceral space is of diagnostic significance. Because of extension into the retrovisceral space the trachea is usually displaced anteriorly. Widening of the mediastinal shadow in an anteroposterior roentgenogram is of diagnostic importance.

The clinical manifestations of esophageal perforation are quite characteristic.[16] The occurrence of spontaneous

14. White, F. W., and Hubert, L.: Parapharyngeal Hemorrhage, in Brown, E. V. L., and others: Year Book of the Eye, Ear, Nose and Throat, Chicago, Year Book Publishers, Inc., 1939, pp. 522-525.

15. Hunt, W. M.: Periesophageal Abscesses: The Importance of Early Surgical Interference, Ann. Otol., Rhin. & Laryng. **48**: 128-139 (March) 1939.

16. Orton, H. B.: Deep Infections of the Neck, Ann. Otol. **47**: 1-48 (March) 1938.

pain following esophageal instrumentation or ingestion of food aggravated by swallowing is usually limited to a segment of the esophagus. Edema and emphysema are of early occurrence. Dyspnea and hiccup may be troublesome factors owing to irritation of the phrenic nerve.

Whereas emphysema is the result of the introduction of air through the perforation, it may also be due to gas-producing micro-organisms. In gross perforations of the esophagus there occur, in addition to emphysema, clinical manifestations of a rapidly progressive contamination and infection of the retrovisceral cervical space or the mediastinum. The clinical manifestations are largely those that characterize systemic involvement and consist of hyperpyrexia, extreme prostration, severe leukocytosis with a disproportionate increase in the polymorphonuclear leukocyte count, and rapid pulse; in other words, they are the manifestations of a profound toxemia.

Fig. 7.—Infections in buccopharyngeal fossa, with bulging forward of that space, compressing the trachea.

The buccopharyngeal space conveys infection from perforation or periesophageal abscess directly to the mediastinum. In the approach to the buccopharyngeal fascia, after the incision is made parallel to the anterior border of the sternomastoid muscle the great vessels and this muscle are retracted outward while the trachea and thyroid gland are retracted inward. This space is entered either by finger or by hemostat. With infections in this area, one is likely to find the fascia rather dense.

MEDIASTINITIS

Mediastinitis following deep infection in the neck may originate from any of the following sources: Ludwig's angina, perforation of the cervical esophagus, suppuration, lymphadenitis, retropharyngeal and peritonsillar abscess, infection following tracheotomy or operations on the larynx or thyroid gland. The infection follows well defined fascial planes, and the management requires surgical drainage as in any other space.

CERVICAL MEDIASTINOTOMY

1. For cervical mediastinotomy the right side is a better approach, as the pleura on that side is farther away from the esophagus. 2. The pleura on the left side is much nearer; therefore greater danger is involved. 3. Local anesthesia should be along the border of the sternomastoid muscle. 4. The trachea is then exposed; also the esophagus. 5. Blunt dissection is made downward to the posterior mediastinum. 6. A drainage tube is inserted and the patient placed in the Trendelenburg position. 7. A suction apparatus is a valuable adjunct.

The possibility of trauma to one or both recurrent laryngeal nerves from deep infection in this area should not be overlooked.

SEPTIC THROMBOPHLEBITIS

Septic thrombophlebitis may follow any severe throat infection or come from tonsillitis or from a tonsillar or peritonsillar abscess. The persistence of a septic temperature following a history of severe throat infection should lead one to consider a possible thrombosis of a vein leading from this area. Positive blood cultures may give the same clinical picture as thrombosis of a lateral sinus.

Treatment calls for opening of infected spaces, together with exposure and possibly resection of the internal jugular vein and, if necessary, all communicating veins found to be thrombosed. This condition is one of the most serious. It is usually a complication of tonsillitis or peritonsillar abscess. The persistence of a septic temperature following any throat infection should lead one to suspect thrombosis of the internal jugular vein.

SUMMARY

1. To know the fundamental principles of deep infections of the neck one should have a thorough knowledge of the fascial planes and their compartments.

2. An accurate history is of the utmost importance, for only by obtaining this can one expect to find the port of entry of the infection and anticipate its course. One should be familiar with the landmarks on the side of the neck and their relation to one another. Adequate drainage is essential.

3. Chemotherapy should be instituted from the beginning.

4. With infections from the hypopharynx, lateral roentgenograms of the neck show considerable displacement of the trachea anteriorly.

5. With perforations of the hypopharynx, instrumental or by foreign object, with or without severe emphysema but with a persistent tender spot over the posterior border of the thyroid gland and with a high leukocyte count, one should have the courage to go in and drain the area.

6. Cervical mediastinotomy may be required in addition to free drainage of the neck.

7. Abductor paralysis should not be overlooked as a result of deep infection low in the neck.

8. Surgical approach to deep infection of the neck calls for adequate drainage by means of a long incision, and unless it is so made one is apt to find oneself working in a funnel.

With Mosher's T incision in his submaxillary approach, one may reach pus in the pharyngomaxillary

fossae, side of the tongue, floor of the mouth and region of the tonsil, and by extending the vertical line of the incision downward along the anterior border of the sternocleidomastoid muscle, one may also reach infection in the carotid sheath and buccopharyngeal fascia. One should not permit oneself to operate through a small incision.

In the approach of the buccopharyngeal fascia, the vessels are retracted outward, while the trachea and the thyroid gland are retracted inward; it should be remembered that the two layers of pretracheal fascia which surround the thyroid gland unite at the posterior surface of the gland and pass across behind the pharynx and the esophagus as the buccopharyngeal fascia. This space is entered either by finger or by hemostat. With infections in this area one is likely to find the fascia rather dense.

If it becomes necessary to do a cervical mediastinotomy, after the procedure of Furstenberg, it is well to remember that the esophagus is in close relationship with the pleura high up on the left side, whereas on the right side the esophagus and pleura come in contact at a lower level. Therefore, one runs less risk of injury to the pleura on the right side.

9. For Ludwig's angina an incision is made just below the jaw from the posterior border of the mylohyoid to the chin, going through the skin and fascia and cutting the mylohyoid, the digastric muscles transversely and the geniohyoid to the floor of the mouth and continuing the incision to the opposite side if both sides are involved. This relieves tension and respiratory difficulty and affords free drainage.

10. With a history of chill and a negative blood culture, adequate drainage may be sufficient without ligations of neighboring veins.

11. Delay in instituting early and courageous treatment for deep infections of the neck may prove disastrous.

12. General anesthesia is contraindicated in the presence of dyspnea.

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ABSTRACT OF DISCUSSION

DR. A. L. BECK, New Rochelle, N. Y.: Dr. Orton is the first to call attention to the severing of the fibers of the suprahyoid muscles for the purpose of relieving tension and pain caused by the inflammatory process. By so doing one may sometimes avoid tracheotomy. When the infection involves the submental region it is my custom to make the surgical approach through the median raphe between the muscles of the suprahyoid region and the tongue. No important vessels or nerves are encountered, and it is possible to explore laterally between the muscle planes with the finger or a blunt instrument. The skin incision may be the collar type just above the level of the hyoid bone. If the abscess is found and the dyspnea is not severe, tracheotomy will not be necessary. When the dyspnea is severe and alarming I prefer to put the patient on the safe side by doing a preliminary tracheotomy. By extending this collar incision laterally to a point beyond the lateral, or posterior, border of the submaxillary salivary gland, this gland is exposed, and through the submaxillary approach, as described by Mosher, access is afforded to the pharyngomaxillary fossa. Access to the side of the tongue and side of the mouth floor is obtained through the intermuscular opening made by the posterior end of the submaxillary salivary gland where it bends around the free part of the posterior border of the mylohyoid muscle. The submental and submaxillary approaches are available through the same exposure, and even small abscesses may be located through one or the other. If the inflammatory swelling is predominantly in the midline, I explore first through the midline raphe approach; if the swelling is predominantly somewhat lateral, and the buccal and pharyngeal involvement is correspondingly predominant on that side, the submaxillary approach is used. To a finished operator, such as Dr. Orton is, an incision across the fibers of the digastric, mylohyoid and geniohyoid muscles is an easy and safe procedure, but only because he knows exactly where the lingual vessels and the hypoglossal nerve are to be avoided. I wish to call attention to the possibility that these structures may be injured in the performance of this maneuver. The incision should be kept to the medial side of the hypoglossus muscle and not carried deeper than necessary to cut the fibers of the geniohyoid muscle. On the cadaver this procedure is easy and simple, but when working in inflamed and edematous tissues it will be much more difficult. I agree with Dr. Orton that patients with peritonsillar abscess can, if given a few minutes time, open the mouth widely enough to enable the observer to obtain a view of the pharynx and fauces. In infection in the anterior compartment of the pharyngomaxillary fossa in which there is severe trismus, opening the mouth widely enough for inspection is often impossible.

DR. SAMUEL IGLAUER, Cincinnati: There was a statement made that chills could be ignored if one finds pus. I think that statement would have to be modified. If the patient has repeated chills, one should suspect and one probably will find thrombosis of some of the veins of the neck. When one suspects that condition it is important to expose the jugular vein and the tributaries that run into it, because one will probably find a thrombus in the vein or its branches. As regard Ludwig's angina, I should like to question the advisability of cutting the geniohyoid muscle. As you will recall, the geniohyoid muscle goes from behind the chin to the hyoid bone, and it therefore holds the hyoid bone forward. Now, if that muscle or the two muscles, there being a pair, are severed, the hyoid bone is apt to fall back over the glottis, as shown by Dr. Orton in one of the illustrations. I think it was Blair in particular who warned against severing the geniohyoid muscles, strap muscles which pull the hyoid bone forward. I should like to have Dr. Orton distinguish between woody phlegmon of the neck and true Ludwig's angina. It seems to me that this term "Ludwig's" should be finally settled and, when we talk about Ludwig's angina, we should know in what particular space the infection is actually located, and that, in turn, will direct us in our surgical procedure. I cannot entirely agree with one of the speakers when he says it is not important to consider the various spaces in the neck. It is very important, because each space is related in some way to the primary port of entry. If one knows that the thing starts in the tonsil, it is more apt to go into the pharyngomaxillary fossa first. If one knows the various spaces, I think surgery will be more accurate than if one just goes into the neck and explores until one finds the pus.

DR. HENRY B. ORTON, Newark, N. J.: Dr. Beck pays me a compliment which I cannot accept because I was not the first to mention cutting the suprahyoid muscles. I am unable to recall the author's name but I believe the article was in the *Journal of Surgery*. However, this gentleman did not make any mention of cutting the geniohyoid. As Dr. Iglauer stated about chills, I have covered this in my paper, but time did not permit me to read the entire paper. I heartily agree with him. As to the question of cutting the geniohyoid muscle, when one does a complete resection of the thyroglossal duct cyst, going through the hyoid bone, one cuts the geniohyoid muscle in so doing. So, I do not think it has much effect on swallowing if one does cut it. Woody phlegmon is a chronic condition or a hyperplasia in contradistinction to Ludwig's angina, which is an acute phlegmonous infection of the floor of the mouth above the mylohyoid muscle or erysipelas of the floor of the mouth, if you will.

CIVILIAN MEASURES FOR THE CONTROL OF VENEREAL DISEASES IN WORLD WAR II

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With each war the problem of venereal disease control is catapulted into the foreground of public health action. World War II is no exception. Every available index reveals that the spread of venereal diseases today is a very real and serious threat to our war effort. Reports of the Army and Navy rank venereal diseases today, as in the past, as leading causes of sickness and disability in our armed forces. More alarming still is the indication, revealed in the latest published reports of the U. S. Army for the calendar year 1940, that the steady, downward progression of venereal disease rates during peace years has been reversed; the trend is now upward. According to these reports, venereal disease attacks 4 men in every hundred each year. Thus, in an army of five million men some 200,000 would be infected annually. Each man would be out of action for about thirty-two days a year.

These data confirm reports from Public Health Service officers, state and local health authorities and other trained personnel that venereal diseases are again on the increase, especially in areas of military and industrial mobilization. It is common knowledge—but worth repeating—that venereal infections acquired by men in the Army and Navy are acquired in civilian communities. Thus the reduction of venereal disease among the nation's fighting forces in the continental United States depends entirely on the success of our control measures in the civilian population.

Two conditions resulting from the war overshadow other considerations in our efforts to control the venereal diseases. These are, first, the extraordinary mobility of both military and civilian populations and, second, the acute shortage of professional personnel in civilian areas. Both these problems complicate the successful application of effective control measures; both impose on the private practitioner of medicine heavier responsibilities for the all out attack on the venereal diseases.

During World War I, military training bases and war industries created special problems for many communities—especially along the eastern seaboard. For the battlefronts were in the east. Troop movements in the present war, however, are not from west to east. Battlefronts are in all directions. War industry in the present war is confined to no particular section but is spread throughout the entire country. Troops move rapidly from place to place; war production workers migrate in great masses. Social and economic patterns are radically changed or completely destroyed in communities from coast to coast. Official reports indicate that the modern practice of transporting military forces over long distances for maneuvers increases the opportunities for exposure among the men and the chances for transmission of infection to new communities. The potentialities for venereal infection provided by every boom town are well known. Cities, both small and large, already have sustained expansions which strain their existing health facilities.

In areas where no serious population increases have occurred the private practitioner frequently finds that his community is but poorly protected against the threat of venereal infection from other parts of the country. I have in mind a case recently discovered in a local health department which illustrates the point: The wife of a soldier stationed at a nearby camp had come to town from outside the state to get a job; the soldier had also been transferred from an out of state base. The couple met and were married shortly after his arrival. In a few months the soldier was again transferred, this time to an unrevealed station. His wife was pregnant, and her infection was discovered in the antepartum examination. Subsequently it was determined that the wife had acquired her disease before marriage in another cantonment area. She was planning to return to her own home as soon as the baby was born. Thus three and possibly more communities in as many states were involved in this family chain of syphilitic infection: the wife's home town to which she would return infected, the city where she acquired her infection and the community where she married, infected her husband and bore her child.

Conditions like these, born of war and accentuated by war's dislocations, mean that many home towns—yours and mine—will have to bear the economic costs resulting from venereal disease unless all forces in all communities unite their strength in a total attack.

The present acute shortage of professional personnel makes it even more difficult to maintain adequate preventive and control measures among civilian groups. Should the Army be increased to a total of 5 million, at least 30,000 physicians, 30,000 nurses and 7,500 dentists will be on active duty with the armed forces. This means that, no matter how rapidly new professional workers are trained, there will be a serious lack of medical personnel in civilian service. Reports to the Public Health Service already indicate what we may expect. In one West Coast city some sixteen local physicians are left to care for about 70,000 civilians. They are working night and day, admittedly rendering what amounts to emergency service as compared to their high standards of medical practice.

By Jan. 1, 1942 there were vacancies for a thousand qualified physicians and two thousand seven hundred public health nurses in state and local health agencies. These vacancies were created in part by the calling to active duty of reserve officers and in part by the intensification of public health problems in war areas.

From the public health point of view the shortage of trained personnel is particularly critical. Successful venereal disease control depends on the discovery and treatment of early infections in order to prevent further transmission of disease. This requires a high order of teamwork on the part of public health personnel and private doctors. The discovery of early infections must be followed by prompt reporting, tracing of contacts and follow-up of patients under treatment. Without such a united attack on venereal diseases in the infectious stages the proportion of noninfectious cases under treatment will continue, as in the past, to exceed the proportion of new infections. We shall still be treating the end results of venereal disease rather than bringing it under control.

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PRESENT STEPS IN CONTROL AMONG CIVILIAN GROUPS

With venereal disease control becoming more and more difficult and with an unavoidable shortage in professional personnel, what steps can be taken to maintain adequate control in the civilian population?

We have a framework of organization and administration on which to launch an all out attack. Each of the forty-eight states has in effect a cooperative control program with the Public Health Service. Although funds budgeted in the fiscal year 1942 were about the same as in 1941, control activities for the first half of 1942 exceeded those of the same period in the previous year.

The following figures indicate some advance: Reports from private physicians and clinics increased almost 3 per cent. The distribution of arsenical drugs increased 12 per cent, and the number of blood tests for syphilis 32 per cent. Blood tests are now being made at the rate of more than seventeen million a year.

More encouraging are the results of measures taken for the control of gonorrhea among the civilian population. Sulfathiazole and sulfadiazine are proving to be remarkably effective in the treatment of gonorrhea. Results obtained from widely separated sources indicate that these drugs can effect cures in about 90 per cent of the cases in as short a period as two weeks. As with syphilis, reporting and treatment of cases seem to be on the increase. The number of cases of gonorrhea reported to health departments in the first half of the fiscal year 1942 has increased 11 per cent and the distribution of sulfonamides 60 per cent.

The routine blood testing of all candidates examined under the Selective Service and Training Act has presented us with the greatest opportunity to date for the control of syphilis in the civilian population. Today, as a result of the tests made by private physicians and the cooperating state health department laboratories, 200,000 men presenting evidence of syphilitic infection have been discovered.

The responsibility of following up infected individuals found in the routine blood testing of Selective Service candidates has fallen on the local health departments, many of which are not yet prepared to undertake such an intensive campaign. Current reports indicate that approximately 60 per cent of the cases reported in the Selective Service examinations have been investigated and that more than 40 per cent of these have been placed or found under treatment. As might have been expected, follow-up and rehabilitation are being achieved, for the most part, in those states where adequate venereal disease control facilities are available.

The great opportunity for the control of syphilis, however, lies in tracing and bringing under treatment the exposed contacts of men found infected in Selective Service examinations. In most states, little or no action has been taken to uncover the sources of infection and the contacts of these infected men.

The states have been greatly handicapped on the one hand by the depletion of their professional staffs and on the other by the enormous increase in demands for all types of public health service. Many state and local health departments are working overtime under the depressing knowledge that their contribution to venereal disease control is both "too little" and "too late." They know that many infectious cases are not being reached in time to prevent the transmission of disease. Other health departments remain apathetic to the problem of venereal disease control.

With emergency funds appropriated by Congress, the Public Health Service has recruited more than seven hundred professional personnel and assigned them to state health departments for duty in critical war areas. Many of these are carrying on venereal disease control work in new mobilization centers as a part of the generalized public health program. Venereal disease control officers and nursing consultants are on duty in each of the nine district offices of the Public Health Service. Liaison officers of the service in the nine army corps areas are also devoting much of their time to the problem of venereal disease control in extracantonment communities. In addition, more than one hundred medical officers and other professional personnel of the service are now devoting full time to venereal disease control work.

Despite advances in organized control work, despite the significant contribution of the Selective Service examinations to case finding, we are still far from positive control of syphilis and gonorrhea in critical areas. In February of this year the Congress recognized the urgent need for intensified venereal disease control activity as a part of the nation's war effort. The sum of $2,500,000 was made available by a deficiency appropriation. On April 1, under the provisions of the Veneral Disease Control Act, the states received additional funds to meet war needs.

Although there has not been sufficient time to permit a detailed report on how these funds are being utilized by the states, the first need to be met is the employment of all available trained personnel. By this means it will be possible for the state laboratories to meet the accelerated pace of blood testing in connection with Selective Service examinations. With the expansion of the Army to six million by the end of 1943, as announced by the government, the laboratories will experience unprecedented demands.

These funds will also facilitate the follow-up and rehabilitation of men found infected with venereal disease in the Selective Service examinations and their subsequent referral to their local boards.

More important still, improvement can be expected in bringing to treatment civilian contacts of these men and of infected military personnel. Although local health departments need money and personnel to carry on this vital control activity, it should be remembered that success depends on the cooperation of the private physicians, the personnel of private clinics and the military authorities in furnishing health departments with the information obtained from patients as to sources of infection.

The present shortage of professional personnel demands that every means be adopted to utilize the available supply to the best advantage. One effective measure, now being applied in many professional fields, is the employment and training of lay workers to supplement the professional staff. In venereal disease control work this system has already been tried and found effective.

Plans are under way to increase the employment and training of lay personnel for follow-up work under the supervision of professional staffs. In this way it should be possible to find more civilian sources of infection and bring more contacts to examination and treatment.

HOW TO CHECK VENEREAL INFECTION

The war will bring to the physicians who remain in their communities overwhelming tasks comparable with the experiences of our colleagues in the Army and Navy.

One of the first tasks commanding the doctor's attention is the control of venereal diseases in his community. No matter how well we plan and execute a national attack, no matter how far we stretch the available funds, the control of these diseases is in the hands of the local physicians of the United States. Neither the federal government nor the local health department nor the private physician, however, can accomplish this great task alone. Together, we can bring venereal diseases under control and keep them under control. The formula appears to be simple: find the early cases; get them under treatment; keep them under treatment. We know that the simplicity of the medical aspects which concern physicians directly is greatly complicated by social, economic and war conditions. If every physician holds fast to that simple plan of action, if every physician meets every case of venereal infection that comes to his attention with a determination to see it through, the threat of venereal diseases to our national strength will be held in check as never before, and at a time when our total strength is needed.

ABSTRACT OF DISCUSSION

Dr. John H. Stokes, Philadelphia: When war enters the venereal disease control scene, not only does venereal disease increase but the long range elements of control move up so that one is compelled to fire point blank arms and ammunition it would have taken years to aim and fire in ordinary circumstances. As Dr. Aselmeyer emphasizes, a state, city or any other group which has not built up laboratory and clinical facilities in advance will have a bad time. It will take a year to standardize the laboratories of a populous state, and the clinical facilities, as indicated by the discussion of the housing problem, will be shot to pieces by the population shift and springing up of boom towns. The next job is to arouse the public. To reach the public, go to key men in each social group who will do something about particular things. Our public education program in Philadelphia got under way, after initial rebuff, through two men, one of whom got us on the air, the other into the street cars. Next, try to rouse the doctors. Worse than busy, worse than worried, depleted in numbers and threatened by this and that, real or imagined, the physician is the only man you cannot get to join actively in venereal disease control work. We shall yet have to train technicians to shoot the drugs, get a doctor to stop in to see that they are not being fired in the wrong direction, throw the bulk of our effort into night clinics and so on. The pharmacist realistically considered is the forefront of venereal disease control in civil life. A copy of our state advisory committee's "Appeal to Pharmacists," referred to in The Journal, June 6, can be made available to you. The pharmacist in Philadelphia is spreading public information. He has backed our civil prophylaxis experiments (packet prophylaxis) and will, we believe, steer patients into clinics and physicians' offices. Of the industrial situation in civilian venereal disease control, our experience has been that the stymie is not with the industrialist but too often with the medical industrial group or the personnel and budget authority. In other words, this is a government proposition and not a civil one. Somebody ought to decide pretty soon who is to do it and do something. Basic law under which enforcement action is taken is aimed at the formally defined prostitute who solicits and asks a price. The old time prostitute in a house or the formal prostitute on the street is sinking into second place. The new type is the young girl in her late teens and early twenties, the young woman in every field of life who is determined to have one fling or better. Such relations are outside the legal control framework entirely and can be reached only by an efficient contact tracing mechanism and persuasion methods. The carrier and disseminator of venereal disease today is just one of us, so to speak.

Dr. Charles M. Carpenter, Rochester, N. Y.: I should like to ask Dr. Stokes what the reaction of the physicians in Philadelphia is to this program that the pharmacist is sponsoring.

Dr. N. O. Gunderson, Rockford, Ill.: I should like to know how it could possibly be made easier for physicians to report sources of infection. They hesitate to put them on the definite reports in writing.

Dr. Theodore Rosenthal, New York: In New York City confidential case reports of venereal disease have a definite space for information as to the source of infection of the patient. In practice, more often than not this specific information is omitted from the case report; however, in all reported instances of communicable venereal disease, that is, primary syphilis, secondary syphilis, early latent syphilis and acute gonorrhea, when such information is omitted from the case report the reporting physician is immediately reached, either by telephone or in person by a health department representative, and the information requested. When the physician can supply the information, he will do so. Occasionally the physician will, and as a matter of fact, has, permitted the health department epidemiologist to interview the patient in his own office, often in the guise of a professional associate or consultant to the treating physician. I should like to refer briefly to our relations with the pharmacist in New York City, where there are over four thousand retail pharmacies. The health department has labored with organizations of retail drug groups for many years. Five or six years ago we secured the cooperation of the various associations to put into their stores counter and window displays giving brief information on syphilis and gonorrhea. In addition, with the further cooperation of these groups the health department got out a special edition of a basic information pamphlet for the public on syphilis and gonorrhea, with an imprint stating that it was distributed through the courtesy of the organized pharmacists of the city. Large quantities of these leaflets were placed on the counters alongside the counter displays. We have always believed that the use of an advertising card in rapid transit coaches and street cars would be of great importance as a health education medium.

Dr. Charles Walter Clarke, New York: An important event has taken place with regard to some of the background problems involved in the control of venereal diseases. There was passed about a year ago an act called the May Act, a federal statute which empowered the Secretary of War and the Secretary of the Navy to create a zone around any army or navy establishment within which the practice of prostitution or aiding and abetting the practice of prostitution became a federal offense. Now for the first time such a zone has been created. This is an important advance, because it shows to those who are making a business and profit out of prostitution that the federal government is really very much in earnest in its intention to protect soldiers and sailors from the dangers of prostitution. An area was set up in Tennessee and comprises twenty-seven counties, extending in a broad band from just north of Nashville to Chattanooga. It doesn't include Chattanooga, because that city and county were, as a matter of fact, doing a very good job in the repression of prostitution. Dr. Stokes makes a very good point in saying that the form of prostitution has changed in a great many places. It has changed particularly in our Northern and Eastern cities; however, the old fashioned type of prostitution in brothels is still extant and still constitutes a very serious problem in some parts of the country. I have figures from one particular place where the sources of infection of a large group of soldiers were traced and found to be 82.5 per cent in the houses of prostitution, and the extraordinary thing was that the health department of the city in which these brothels were located carried out a health inspection of every prostitute once a week. This, I think, has some significance.

DR. A. J. ASELMEYER, Washington, D. C.: I want to thank Dr. Stokes and the other gentlemen for their very helpful suggestions in regard to the solution of the problems which must be met. The pharmacists are cooperating with a number of state health departments, in addition to the city of Philadelphia, at least to the extent of putting displays in their windows and directing applicants for remedies for treatment of venereal disease to clinics or private physicians and by pledging not to sell remedies direct to the customer. I was glad to hear Dr. Stokes's remarks on the use of prophylactics and the need for extending and interpreting their use to the civilian population. This is being tried in one area on a demonstration basis at present, in cooperation with the Public Health Service and the city health department. The alcohol distributors in a number of states are insisting that their retailers do not have any rooms for rent anywhere on or near about the premises. If they do have, their licenses are revoked. In regard to Dr. Carpenter's question, Dr. Stokes tells me that the physicians are at least not opposed to the use of pharmacists. They are somewhat interested but seem to be so busy and have so many other things to do that they don't seem to react very much to it one way or the other. I want to thank Dr. Clarke for mentioning the progress made in the repression of prostitution.

THE METHOD OF NASOPHARYNGEAL CULTURE IN THE DIAGNOSIS OF WHOOPING COUGH

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In a previous report [1] attention was called to the superiority of the nasopharyngeal culture to the customary cough plate culture when the two procedures were simultaneously tested in a group of 25 patients with whooping cough. In the present paper we wish to present the data collected in a further comparative study of these methods.

The majority of the cultures were obtained from infants and children in the contagious division of the Rochester Municipal Hospital. Some were obtained from patients in the outpatient department and a few from private patients and from persons referred to the Rochester health bureau laboratory for diagnosis. Only 3 adults were included in the series.

The swab for culturing the nasopharynx was prepared by tightly wrapping a small bit of cotton about the end of a piece of flexible copper wire 6½ inches [2] in length (fig. 1). The prepared swab was placed in a pyrex test tube (5 by ⅝ inches) and the tube, plugged with cotton, was sterilized in the autoclave.

A nasopharyngeal culture was taken by gently passing the swab back through the nares until it touched the posterior nasopharyngeal wall. Culture was taken from only one side of the nose. If an obstruction was met on one side, the swab was withdrawn and inserted into the opposite naris. With a little experience, the culture was rapidly obtained and with practically no discomfort to the patient.

To inoculate the medium, a drop of 0.85 per cent solution of sodium chloride was placed on the surface of Bordet medium, near one edge, and the material from the swab gently mixed into the drop of saline solution. Streaking was then carried out with a flexible platinum loop. The streaked plate was incubated for seventy-two hours at 35 C.

The cough plates used for comparison with the nasopharyngeal cultures consisted of Bordet medium in a small Petri dish (2 inches in diameter) which was contained in a metal salve box. The plate was held in place in the box by wedging a small piece of cork between the dish and the side of the box (fig. 1). This container was relatively nonbreakable and could be easily carried about in the physician's pocket. After incubation, the half of the Petri dish containing the medium was removed from the metal box, making it easy to observe the hemolytic zones about the colonies of Hemophilus pertussis. We have found this type of cough-plate assembly distinctly superior to the usual Petri dish or the salve box as a container for the medium, for it preserves the advantages but excludes the disadvantages of each.

The composition of the medium [3] has been previously described.[4] It consists of a potato extract base to which has been added freshly collected, defibrinated sheep blood.

On this medium Hemophilus pertussis appeared after forty-eight hours of incubation at 35 C. as small convex smooth glistening colonies resembling tiny drops of mercury. At the end of seventy-two hours of incubation a zone of incomplete hemolysis was present about the colony. On the streaked plates almost pure cultures of Hemophilus pertussis were frequently obtained from nasopharyngeal swabs (fig. 2). All strains were further identified by the rapid agglutination method of Kendrick.[5]

RESULTS

A total of 438 nasopharyngeal cultures was taken from 248 patients with pertussis and 198 cough plates were made in 157 cases. More than one culture was frequently obtained from each patient. In certain instances, in hospitalized patients, cultures were taken two or three times a week. The results of the comparative study of the nasopharyngeal and the cough plate methods have been tabulated on the basis of total cultures and of primary cultures taken. They have also been compared on the basis of age.

Supported in part by a grant from the John and Mary R. Markle Foundation.

From the departments of pediatrics and bacteriology, the University of Rochester School of Medicine and Dentistry.

Based on portions of a thesis presented by Anne Morris Brooks in May 1942 to the University of Rochester in partial fulfilment of the requirements for the degree of M.S. in bacteriology.

1. Bradford, W. L., and Slavin, Betty: Nasopharyngeal Cultures in Pertussis, Proc. Soc. Exper. Biol. & Med. **43**: 590 (March) 1940.

2. The wire, known as "trolling line," was obtained from Sears Roebuck & Co.

3. The base was made as follows:

Peeled potato	500.0 Gm.
Glycerin (U. S. P.)	40.0 cc.
Agar (Bacto)	120.0 Gm.
Sodium chloride (chemically pure)	21.5 Gm.
Distilled water	4,000.0 cc.

To the melted and cooled base was added 15 per cent of defibrinated sheep blood. After being mixed, the mixture was poured into Petri dishes. The plates were kept at 4 C. They were discarded when 4 days old.

4. Bradford, W. L., and Slavin, Betty: The Opsonocytophagic Reaction of the Blood in Pertussis, J. Clin. Investigation **16**: 825 (Sept.) 1937.

5. Kendrick, P. L.: Rapid Agglutination Technic Applied to Bacillus Pertussis Agglutination, Am. J. Pub. Health **23**: 1310 (Dec.) 1933.

More nasopharyngeal than cough plate cultures were taken (table 1). This was especially true among the infants, whose cough was often more "hacking" than explosive in character and in whom it was frequently impossible to stimulate a paroxysm when a cough plate

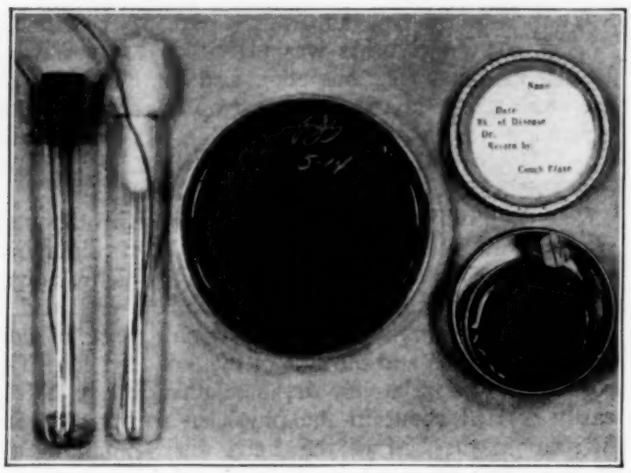

Fig. 1.—Materials for the nasopharyngeal and cough plate methods of culturing Hemophilus pertussis.

was to be exposed. In 45 instances satisfactory cough plate exposures could not be obtained, although nasopharyngeal cultures, taken on the same occasion, were positive. Occasionally older children were not able to cough when brought to the clinic, in which instances only nasopharyngeal cultures were made.

A survey of all the cultures made, disregarding age, showed that in a total of 438 nasopharyngeal cultures 52 per cent were positive, while in a total of 198 cough

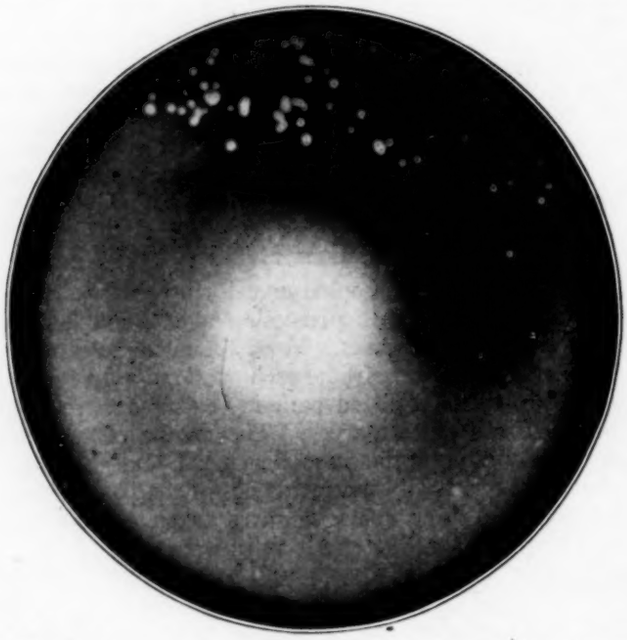

Fig. 2.—Seventy-two hour growth of Hemophilus pertussis showing an almost pure culture obtained by the nasopharyngeal method.

plate cultures 37 per cent were positive (table 1). Since factors such as repetition of cultures, age of the patients and stage of the disease when the cultures were taken were not evenly balanced in the two groups, accurate comparison of the results was not possible. The difference in the percentages of positive cultures (15), however, compares favorably with that (24) obtained when primary cultures only were analyzed (table 2). There was a greater difference between the groups during the early weeks of the disease, at a time when a prompt diagnosis is most important because of the high degree of infectivity. The lower percentage of positive cultures obtained during convalescence was to be expected. Further analysis of the data revealed that in 211 (85 per cent) of the 248 cases of pertussis the clinical diagnosis was confirmed by either primary or repeated nasopharyngeal cultures. In certain cases of mild involvement a definite diagnosis would not have been possible without recovery of the organism from the respiratory tract.

TABLE 1.—*Total Number of Cultures: Results of Four Hundred and Thirty-Eight Nasopharyngeal and One Hundred and Ninety-Eight Cough Plate Cultures*

	Nasopharyngeal Swab Method			Cough Plate Method		
	Total Number	248 Cases		Total Number	157 Cases	
Week of Disease	of Cultures	Number Positive	Per Cent Positive	of Cultures	Number Positive	Per Cent Positive
1st	60	48	80	31	14	45
2d	124	87	69	75	36	48
3d	91	55	64	39	17	46
4th	59	15	24	14	3	21
5th and on	104	21	20	39	3	8
Totals	438	226	52	198	73	37

Difference in percentage = 15; standard error = 4.2; ratio = 3.5 to 1

TABLE 2.—*Primary Cultures: Comparison of the Nasopharyngeal and the Cough Plate Method*

	Nasopharyngeal Swab Method			Cough Plate Method		
Week of Disease	Total Number of Cultures	Number Positive	Per Cent Positive	Total Number of Cultures	Number Positive	Per Cent Positive
1st	60	49	81	30	14	47
2d	86	62	72	59	28	47
3d	53	33	62	36	13	36
4th	21	5	24	12	2	17
5th and on	28	3	11	20	1	5
Totals	248	152	61	157	58	37

Difference in percentages = 24; standard error = 4.9; ratio = 4.9 to 1

Data relating to primary cultures only are shown in table 2. Primary cultures were positive much more frequently by the nasopharyngeal than by the cough plate method.

A more accurate assessment of the value of the nasopharyngeal method was possible when simultaneous cultures were made by the two methods on the same patient. One hundred and eighty-three simultaneous cultures were taken from 165 patients (table 3). One hundred and five (57 per cent) of these were positive by the nasopharyngeal method while but 62 (34 per cent) were positive by the cough plate method. This difference of 23 per cent is statistically significant, because the ratio of this difference (23) to its standard error (5.0) is 4.6 to 1. Ninety (48 per cent) of the 183 simultaneously taken cultures were positive only by the nasal method, while 21 (11.4 per cent) were positive

by the cough plate method alone—a finding which suggests that the combined method of culturing would give the optimal positive results.

The superiority of the nasopharyngeal method was still more apparent when the patients were grouped according to age. The results (table 4) indicated a difference of 48 per cent in the number of positive cultures obtained by the two methods during the first two weeks of the disease. Regarding the total of 106 simultaneous cultures taken from 88 patients, 57 per cent were positive by the nasopharyngeal method as compared with 25 per cent positive by the cough plate method, a difference of 32 per cent. The ratio of this difference (32) to its standard error (6.4) is 5 to 1, indicating clearly that this difference is significant.

Even when simultaneous cultures made on older children were analyzed (table 5), there were significantly more positive cultures obtained by the nasopharyngeal method during the catarrhal period. The difference observed for the entire series, however, was not statistically significant, as indicated in the table.

Although these results indicate that the nasopharyngeal culture method is definitely superior to the cough plate method for the laboratory diagnosis of pertussis, we recognize the fact that the newer method requires more extensive testing. The results obtained recently by Miller and his associates [6] constitute an encouraging confirmation of our observations. Further testing, particularly under conditions of a field study, should be made. This is especially desirable because it is highly probable that the ever increasing number of cases of mild and atypical pertussis resulting from the modifying effect of vaccine presents a definite demand for better methods of laboratory diagnosis.

In our hands, recent preliminary experiments have shown that the nasopharyngeal method gives reliable results for field work if the swab is kept moist. By keeping the charged swab suspended in a test tube containing a bit of rubber sponge wet with 0.85 per cent solution of sodium chloride and by keeping the tube plugged with a rubber stopper (fig. 1), the swab will remain moist for ninety-six hours. Of 17 swabs inserted into the nasopharynx of patients with pertussis, 15 were positive after being held for twenty-four hours at room temperature in this type of container. In 2 instances they were positive after forty-eight hours. We believe that this technic will give satisfactory results if the medium is inoculated within twenty-four hours after the swab culture is taken.

Thus we have found the nasopharyngeal method useful in studying the survival of Hemophilus pertussis in the nasopharynx during whooping cough, and, on one occasion, in an investigation of an epidemic of parapertussis occurring among children attending a day camp.

TABLE 3.—*Simultaneous Cultures: Comparative Results of One Hundred and Eighty-Three Cultures Taken from One Hundred and Sixty-Five Cases of Pertussis*

Stage of Disease	Total Number of Cultures	Nasopharyngeal Swab Method: Number Positive	Nasopharyngeal Swab Method: Per Cent Positive	Cough Plate Method: Number Positive	Cough Plate Method: Per Cent Positive
Catarrhal (1st & 2d weeks)	96	67	70	38	39
Spasmodic (3d & 4th weeks)	49	29	59	21	43
Decline (5th week on).....	38	9	24	3	8
Totals.....	183	105	57	62	34

Difference in percentages = 23; standard error = 5.0; ratio = 4.6 to 1.

TABLE 4.—*Simultaneous Cultures from Patients Under Three Years of Age: Comparative Results of One Hundred and Six Cultures Taken from Eighty-Eight Patients*

Stage of Disease	Total Number of Cultures	Nasopharyngeal Swab Method: Number Positive	Nasopharyngeal Swab Method: Per Cent Positive	Cough Plate Method: Number Positive	Cough Plate Method: Per Cent Positive
Catarrhal (1st & 2d weeks)	51	39	77	15	29
Spasmodic (2d & 4th weeks)	28	18	64	10	35
Decline (5th week on).....	27	7	26	2	7
Totals.....	106	61	57	27	25

Difference in percentages = 32; standard error = 6.4; ratio = 5 to 1.

SUMMARY

A total of 438 nasopharyngeal cultures from 248 cases of pertussis and 198 cough plate cultures from 157 cases were taken. Fifty-two per cent of the nasopharyngeal cultures and 37 per cent of the cough plate cultures were positive.

In a series of 248 primary nasopharyngeal cultures, 152 (61 per cent) were positive as compared with 58 positive (37 per cent) in a group of 157 primary cough plate cultures.

When 183 simultaneous cultures were made by the two methods in 165 cases of pertussis, 105 (57 per cent) were positive by the nasopharyngeal method and 62 (34 per cent) were positive by the cough plate method. This difference (23 per cent) was statistically significant. The difference was even greater when data obtained by cultures from infants under 3 years of age were analyzed.

TABLE 5.—*Simultaneous Cultures from Patients Over Three Years of Age: Comparative Results of Seventy-Seven Cultures Taken from Seventy-Seven Patients*

Stage of Disease	Total Number of Cultures	Nasopharyngeal Swab Method: Number Positive	Nasopharyngeal Swab Method: Per Cent Positive	Cough Plate Method: Number Positive	Cough Plate Method: Per Cent Positive
Catarrhal (1st & 2d weeks)	45	31	69	23	41
Spasmodic (3d & 4th weeks)	21	11	52	11	52
Decline (5th week on).....	11	2	18	1	10
Totals.....	77	44	57	35	45

Difference in percentages = 12; standard error = 8; ratio = 1.5 to 1.

CONCLUSIONS

The method of nasopharyngeal culture is superior to the cough plate culture method for the diagnosis of whooping cough, particularly in infants.

260 Crittenden Boulevard.

6. Miller, J. J.: The Diagnosis and Treatment of Whooping Cough, J. Pediat. **20**: 248 (Feb.) 1942. Saito, T. M.; Miller, J. J., and Leach, C. W.: The Nasopharyngeal Swab in the Diagnosis of Pertussis, Am. J. Pub. Health **32**: 471 (May) 1942.

PERTUSSIS IMMUNITY WITH TOXIN AND ANTITOXIN

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We have undertaken a clinical and immunologic study involving the antitoxin immunity actively induced and passively conferred in well and in ill children, based on the fact recently demonstrated by Merritt Roberts [1] that endotoxin and exotoxin of Hemophilus pertussis are identical and on the fact previously demonstrated that this toxin is antigenic. Bordet and Gengou [2] extracted a toxic substance from H. pertussis by grinding the organisms. They did not demonstrate its antigenicity and termed it endotoxin. Other investigators, notably Tessier and his co-workers,[3] Lawson [4] and Roberts,[1] demonstrated that such extracts were antigenic. Subsequently washings from whole organisms and broth mediums in which the organisms had grown were found by Evans [5] and Mishulow [6] to be toxic and to produce antitoxins. Mishulow and later Koplik [7] demonstrated, by the Shwartzman phenomenon, a toxin in some cultures of H. pertussis. Sprunt [8] produced identical pneumonic lesions by intratracheal injections of bacilli (living and dead) and of toxin in normal mice, rabbits and monkeys which were prevented by antitoxin. Merritt Roberts recently offered evidence to show that the toxic filtrate or endotoxin and exotoxin were identical and that the two produced a neutralizing antitoxin. The exotoxin obtained in broth cultures and the endotoxin from bacterial extracts have been shown to be identical in four respects: heat stability, lethal power in mice, necrotizing effect on the skin of rabbits and the specific reactivity with pertussis antitoxin. Both are capable of antibody production.

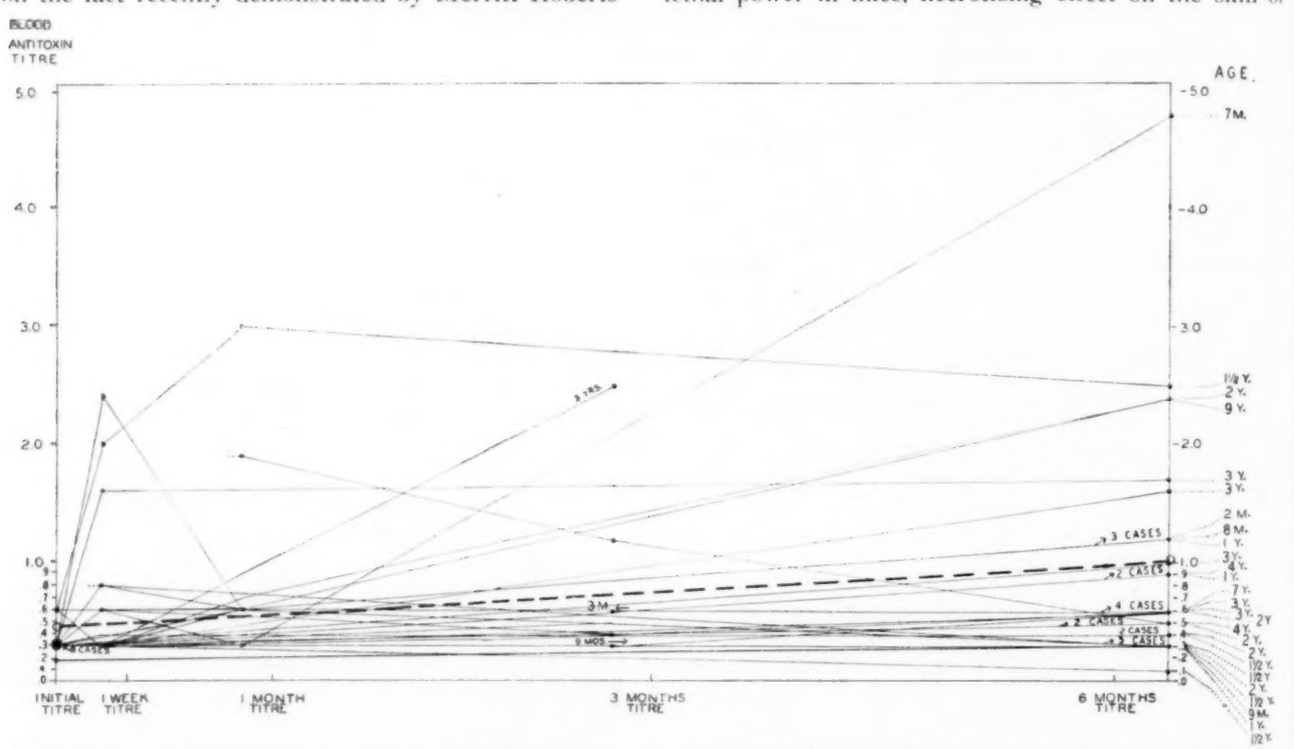

Chart 1.—Antigen titer of children given injections of 300 units of pertussis toxin per cubic centimeter of antigen. The total dose is 6 to 8 cc. in four weekly injections. Titer increased, 22 children (68.75 per cent); titer unchanged, 6 children (18.75 per cent; 3 had temporary increase); titer decreased, 4 children (12.5 per cent). Among children under 1 year titer increased in 8, was unchanged in 1 and decreased in 1. In charts 1-4 and in chart 7 the black dot indicates initial and final titer in each case; dashes, initial titer unobtained; white dot, average change; caret pointing to left, less than 0.3; arrow pointing up, vaccine administration or antigen administration, as the case may be. *Y*, years; *M*, months.

These studies were conducted mainly in the wards of the Willard Parker Hospital with the assistance of the resident physicians, on siblings of patients admitted there, and at the Central Harlem Health Center.

ACTIVE IMMUNIZATION WITH TOXOID PROPHYLAXIS

One hundred and thirty-five unselected children living at home were given prophylactic injections. One hun-

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Drs. Katona and Scannell are resident physicians at the Willard Parker Hospital and Drs. Alterman and Robinson are Littauer fellows at the Harlem Hospital.

From the Littauer Pneumonia Research Fund of New York University College of Medicine. These studies received additional support from Mr. Bernard M. Baruch, Mr. Bernard M. Baruch Jr., Miss Belle W. Baruch and Mrs. H. Robert Samstag.

Dr. Merritt Roberts of Pearl River, N. Y., performed the rabbit skin titrations. The antitoxin was prepared in the Lederle Laboratories, Inc., Pearl River. It and the toxoid were furnished by Dr. W. G. Malcolm. Dr. H. T. Fuerst assisted with some of the injections. The observations at the Central Harlem Health Center were made with the permission of the commissioner of health, Dr. John L. Rice, and the cooperation of its personnel.

1. Roberts, Merritt: Personal communication to the authors.
2. Bordet, Jules, and Gengou, Octave: Ann. Inst. Past. **21:** 720, 1907; **23:** 415, 1909.
3. Tessier, Reilly and Revalier: J. de physiol. et path. gén. **27:** 54a, 1929.
4. Lawson, G. M.: Epidemiology of Whooping Cough, Am. J. Dis. Child. **46:** 1454 (Dec.) 1933.
5. Evans, D. G: J. Path. & Bact. **51:** 49-58 (July) 1940.
6. Mishulow, Lucy: J. Pediat. **9:** 492 (Oct.) 1936.
7. Koplik, L. H.: Shwartzman Phenomenon with B. Pertussis Culture Filtrates, Proc. Soc. Exper. Biol. & Med. **32:** 309-310 (Nov.) 1934.
8. Sprunt, D. H., and Martin, D. S.: Personal communication to the authors.

dred of them were given pertussis toxoid antigen and 35 were given pertussis vaccine. None of these children had been previously immunized.

The toxoid was prepared by the addition of solution of formaldehyde to pertussis toxin and contained 300 units of toxin per cubic centimeter. A unit of toxin is that amount which kills one half of six 20 Gm. mice in forty-eight hours. The vaccine was prepared to contain 20 billion bacilli per cubic centimeter.

To test the immunity produced by toxoid, each child was given 2 cc. of material intramuscularly in the buttock once a week for four weeks. The toxoid injection produced a local soreness and induration for one day and fever only rarely. Samples of venous blood were taken before treatment and at one and six months after completion of the injections. To test immune response, varying dilutions of immune serums were combined with a constant amount of toxin known to contain a definite number of skin test doses.[9]

The amount of serum necessary to prevent necrosis in the skin of rabbits was estimated as the antitoxic titer and was measured in rabbit skin test units.

The blood titers after injections indicated that both the toxoid and the vaccine produce a rise in the neutralizing antitoxic antibody. The usual initial titer was less than 0.3 unit and the terminal titer was usually 1 unit per cubic centimeter. The fact that vaccine stimulates an antitoxic antibody suggests that part of its antigenicity is due to the presence of pertussis toxin (chart 1). There were 10 infants in 1 of whom an increased antitoxic titer developed. In another one there was a fall. This was a newborn infant. The titer may have been high at first because of placental transmission. Among the 32 cases presenting blood titers analyzed at the end of six months 22, or 69 per cent, showed a rise in titer. Among the children who received vaccine, only 4 have had six month titers to date. All of these showed a rise. Although there have been nine known exposures, to date only 1 child who had received toxoid has contracted the disease. Unfortunately, the blood titer of this child was not determined before the disease appeared. This occurred in a pair of 1 year old fraternal twins, one of whom contracted the disease six months after injection of toxoid when exposed to an older brother for two weeks. His twin sister, equally exposed, was immediately given antitoxin and remained well. Family exposures of 2 children were for longer than three weeks; the other 7 children had casual exposures to playmates.

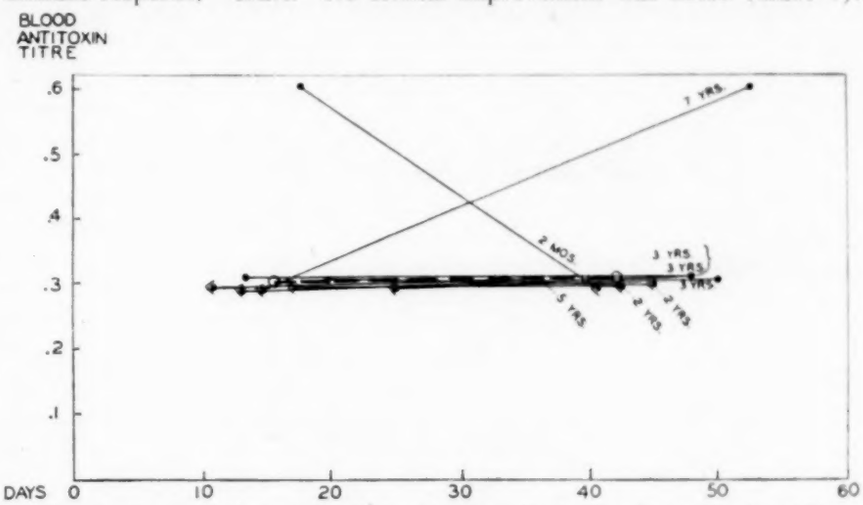

Chart 2.—Pertussis patients: antitoxic titer without specific therapy: titer increased, 4 children; titer decreased, 2 children; titer unchanged, 2 children.

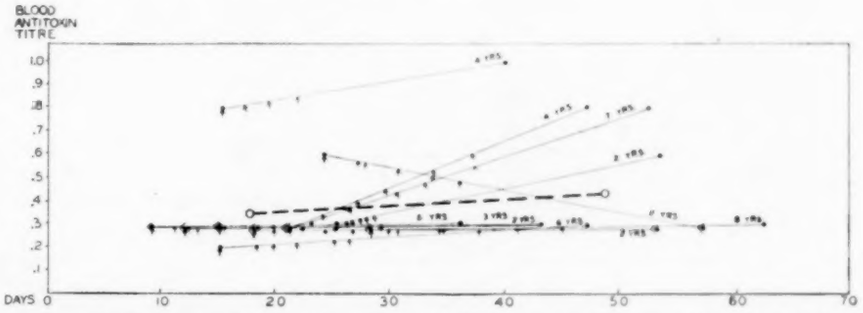

Chart 3.—Vaccine treated pertussis patients with 20 billion organisms per cubic centimeter; total dose is 8 cc. Titer increased, 9 children; titer unchanged, 1 child; titer decreased, 1 child.

ACTIVE IMMUNIZATION WITH TOXOID (THERAPEUTIC)

Additional blood studies were done on children who were in the active stage of the disease. In a group of 11 sick children who were not given specific treatment, only 4 had an increased antitoxic titer (chart 2). Of 8 other children with blood titrations done at varying periods, 5 had an increased titer, 9 among the 18 who were tested.

An attempt was made to modify the course of the disease by giving vaccine. Nine of the 11 had a rise in antitoxic titer at the end of one month, but the disease was little changed (chart 3). Further attempts were made to determine the effect of a specific agent on the clinical course of the disease. Thirty-three sick children were injected with 6 to 10 cc. of toxoid or antigen. Initial and one month blood titers were studied. In 4 there was a rise in titer at the end of a month as shown in the 12 examples chosen for the chart. No clinical improvement was noted (chart 4).

THERAPEUTIC ANTITOXIN

The prophylactic and therapeutic effect of an antitoxin[10] produced in rabbits was also studied. Some of our rabbit antiserums were prepared by the methods used for the refinement and concentration of antipneumococcus serums. The concentration was tenfold. Other serums were prepared by the Parfentjev[11] digestion method. The refined serums contained upward of 17,500 units per cubic centimeter.

Thirty-three children with pertussis were given rabbit antitoxin in doses varying from 6 to 50 cc. The refined and concentrated rabbit serum was given at a time ranging from eight to forty-three days after onset of symptoms. There were no fatalities in this

9. Blood was drawn from the femoral vein. Subsequent to this study the method of testing has included the use of a control antitoxin in each test, with consequent improvement in the accuracy of the results. There are still discrepancies which require investigation.

10. The first antitoxin was produced Oct. 8, 1940. The first prophylactic dose was administered July 5, 1941.

11. Perfentjev, I. A.: U. S. Patent 2,065,196, 1936. Weil, A. J.; Parfentjev, I. A., and Bowman, K. L.: J. Immunol. **35**: 399 (Nov.) 1938.

group. Nine attacks were severe at onset. No decided clinical improvement was noted in any case. In only 2 cases in which antitoxin was given eight and nine days after onset was a slight improvement observed.

Four cases have been chosen to illustrate the considerable rise in antitoxin titer which may be secured following injection of antitoxin. The antitoxic titer was usually maintained above 4 units per cubic centimeter for over twenty days. To 1 of the children, aged 20 months, more than a quarter of a million units was given on three occasions. The antitoxic titer of her blood rose promptly to more than 100 units, and this level was maintained for twenty days. Another child, aged 2½ years, received massive doses, and the antitoxic titer rose to more than 400 units. In eleven days the titer had fallen 81 per cent. In 2 children aged 5 and 2 years respectively, who received smaller doses of antitoxin and whose serum antitoxic titer rose to 10 and 5 units respectively, the fall was 51 per cent in about twenty days. It appears that the administration of extremely large doses of antitoxin may be unnecessary and wasteful (chart 7).

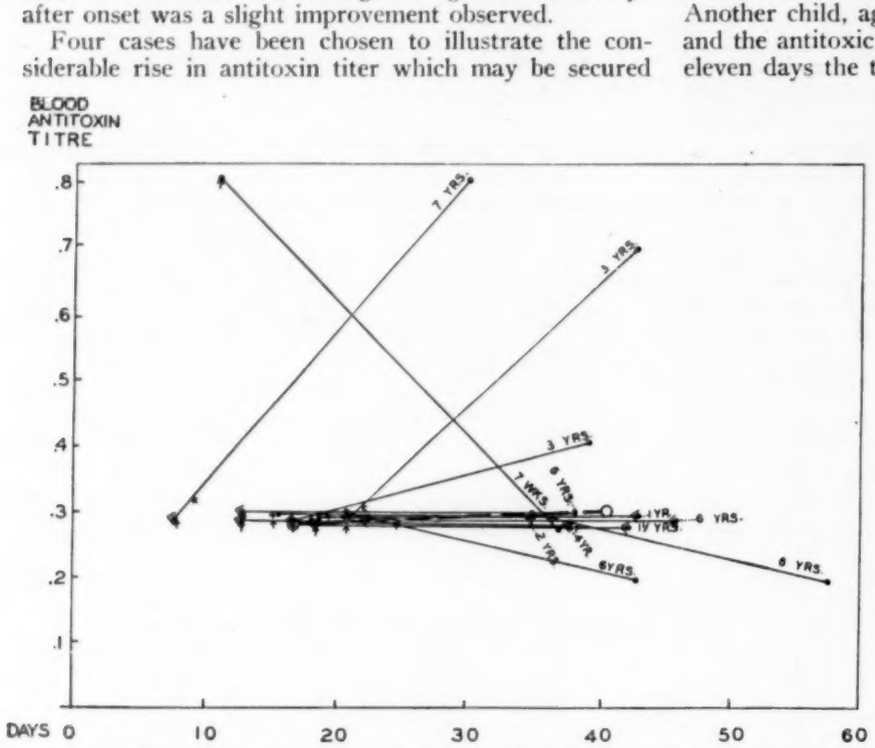

Chart 4.—Antigen treated pertussis patients with 300 units per cubic centimeter of antigen; total dose 6 to 8 cc. Titer increased, 4 children; titer decreased, 3 children; titer unchanged, 5 children.

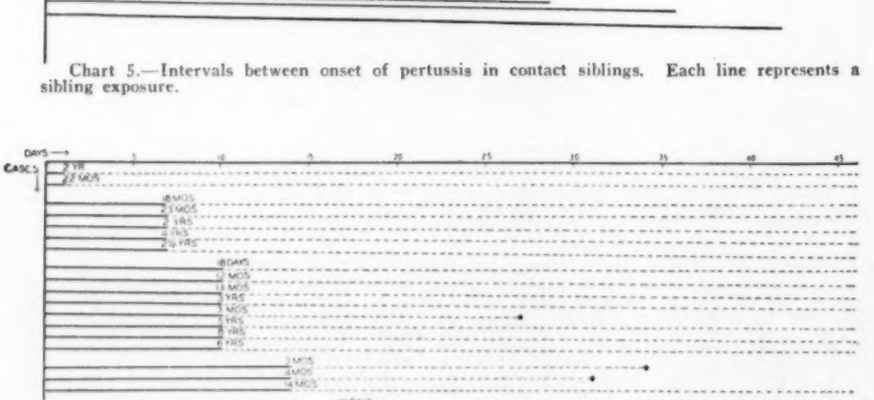

Chart 5.—Intervals between onset of pertussis in contact siblings. Each line represents a sibling exposure.

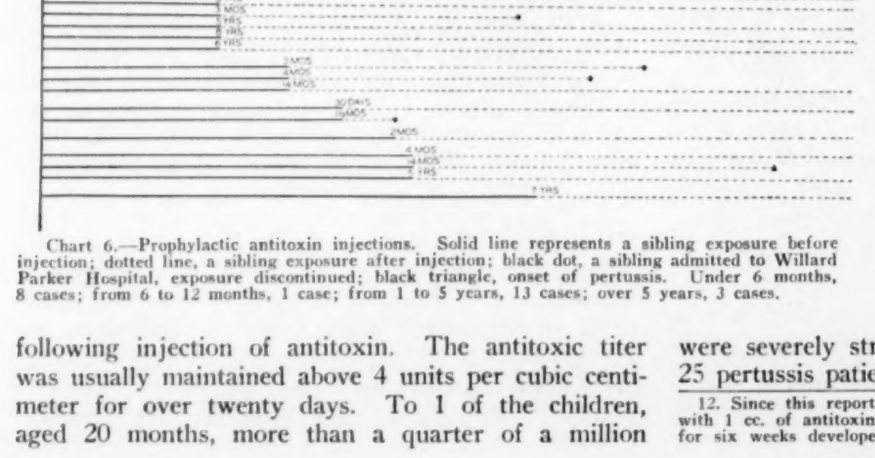

Chart 6.—Prophylactic antitoxin injections. Solid line represents a sibling exposure before injection; dotted line, a sibling exposure after injection; black dot, a sibling admitted to Willard Parker Hospital, exposure discontinued; black triangle, onset of pertussis. Under 6 months, 8 cases; from 6 to 12 months, 1 case; from 1 to 5 years, 13 cases; over 5 years, 3 cases.

PROPHYLACTIC ANTITOXIN

To another group, 25 exposed children, antitoxin was given to prevent pertussis. The antitoxin was administered intramuscularly on alternate days. The dose varied with the age of the child and the degree of exposure. A total of 10 cc. of antitoxin was the maximum given any child.[12a] The children in this series were observed from July 1941 to April 1942. The incidence of pertussis during this time was high in our community. Seventeen of the 25 children remained in family contact with patients to whom they were exposed, even after prophylaxis. This type of exposure provides a severe test. In all but 7 instances the patient with pertussis was observed by one of us to whoop. In the evaluation of the results, a child was completely protected or the prophylaxis was considered unsuccessful.

The age of the exposed children given antitoxin ranged from 18 days to 7 years, with 19 children, or 76 per cent, under 5 years. Children can acquire the disease up to forty days from the beginning of exposure but rarely after the first four weeks. We have considered that children exposed beyond six weeks without contracting the disease are immune, and these were not immunized.[12b] The usual duration of exposure before prophylaxis was ten days. Of the 25 children given antitoxin, only 1 child contracted the disease. This was a 14 month old child who was given injections on the twenty-first and twenty-third days of disease with 2 cc. of antitoxin and who developed a mild pertussis starting in the third week afterward. The exposure was to 2 older siblings who were severely stricken. As a control, the siblings of 25 pertussis patients admitted to Willard Parker Hos-

12. Since this report was read (*a*) more children have been protected with 1 cc. of antitoxin for upward of three weeks; (*b*) a child exposed for six weeks developed pertussis.

pital were studied to determine the interval between the onsets of the disease. In every one of the twenty-five families all the siblings contracted the disease except those who had had pertussis previously. The time between attacks varied from three days to forty days, with the majority occurring after one week (charts 6 and 7).

In the central and east Harlem districts, where whole families often live in one room, it is reasonable to assume that the secondary attack rate among exposed children would be high. Nineteen of the 25 patients, or 76 per cent, of those who received antitoxin were under 5 years of age. These children fall into the age group with the highest susceptibility. Seven of these children were under 6 months of age when exposed. Hesbacher [13] estimates the expected incidence of secondary cases in exposed children under 5 at 90 per cent. Eighty per cent of the children admitted to Willard Parker Hospital with whooping cough in the year 1941 were 5 years of age or under. Seventy-three per cent of our exposed children were younger than their siblings with pertussis. We found that this was the first occurrence of the disease in the family because all the remaining siblings were in the active stage of the disease. This precluded the possibility of any previous significant exposure to pertussis. The occurrence of 1 secondary case in a child under 5 years of age makes the incidence in this group 4 per cent. The expected incidence in this group is 90 per cent.

The observation that antitoxin may prevent the development of pertussis in exposed susceptible children seems to be supported by the approximately simultaneous observations of Bradford, Scherp and Brooks.[14] In their study, 20 children were treated with a concentrated antibacterial antiserum and only 7 contracted the disease.

COMMENT

The existence of a pertussis toxin has been known since the observations of H. pertussis by Bordet and Gengou with their extraction of a toxic substance from the organism. In our observations of 200 children, the initial blood titer was rarely 0.3 unit of antitoxin. This was true both of children who had no contact with the disease and of children during the first two weeks of illness. Fifty per cent of the sick children spontaneously developed an increase in antitoxic titer. In response to injections of antigenic substances, both vaccine and toxoid, the antitoxic titer of the blood of 75 per cent of well children was increased. In individual cases the response to actual immunization was unpredictable and in some cases delayed. Even infants under 1 year responded to the antigenic stimulation of toxoid.

It is probable that the reduction of susceptibility to pertussis in children injected with vaccine or toxoid is due to the increased titer of antitoxin in the blood at the time of the invasion of H. pertussis. Because of the great variation in severity and duration of the disease, it is difficult to assert that the disease has been modified in any particular instance once the paroxysms have appeared. In several instances the paroxysms have seemed less severe, or vomiting and fever have been diminished. This is mentioned with great reservation.

Failure of antitoxin therapy during the disease in our series may be due to the fact that among our patients who received antitoxin all but 1 child had been ill for more than one week. By this time the toxin has produced its effect and the organisms have changed their character. Moreover, after fourteen days the disease is extremely variable and observed changes may have been fortuitous and accordingly were not attributed to the antitoxin.

Toomey [15] was able to change the character of the secretion of H. pertussis from a definite toxin to a

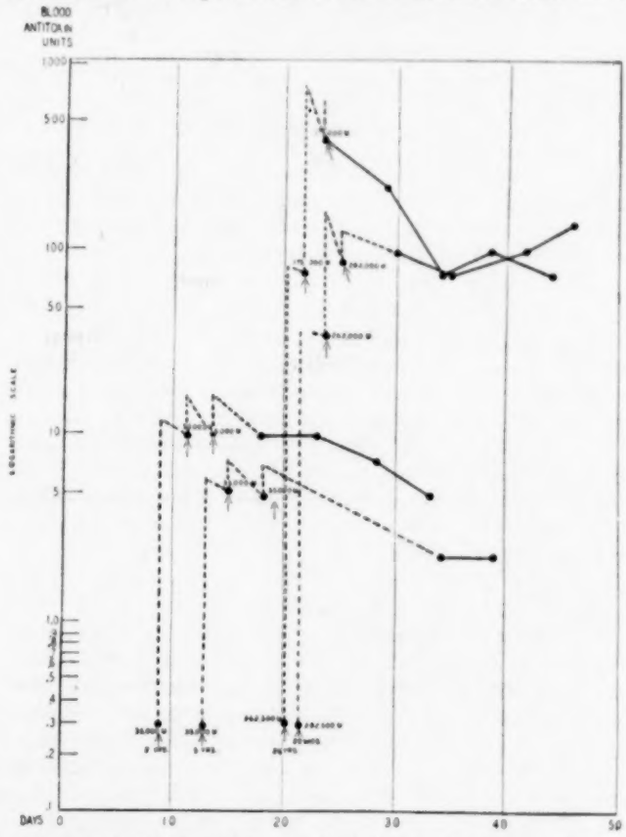

Chart 7.—Antitoxin treated pertussis patients; antitoxin concentrations in blood. Arrows indicate intramuscular administration.

sticky exudate, distinct and apart from the toxin, by varying the mediums on which the organisms were grown.

On intratracheal instillation the toxic substance produces a pneumonic lesion in rats, rabbits and monkeys. This is similar to the pneumonia induced by bacilli. As a prophylactic agent in exposed children, antitoxin supplies substances which neutralize the toxic product of the H. pertussis responsible for the lesion and in older children pending the development of active immunity in response to toxin as toxoid or vaccine. As a possible explanation of the effect of antitoxin, it should be recollected that the exotoxin has been found concentrated on the cell membrane. Accordingly it may

13. Hesbacher, E. N.: Iowa J. M. Soc. **30**: 236 (June) 1940.
14. Bradford, W. L.; Scherp, H. W., and Brooks, A. M.: Proc. Soc. Exper. Biol. & Med. **49**: 157 (Feb.) 1942.
15. Toomey, J. A.: Mechanism of Whooping Cough, Am. J. Dis. Child **56**: 469 (Aug.) 1938; Newer Aspects of Whooping Cough Problem, J. Pediat. **10**: 472 (April) 1937. Toomey, J. A., and Takacs, W. S.: J. Infect. Dis. **62**: 297-299 (May-June) 1938.

be reasonable to assume that neutralization of this product by antitoxin interferes with the normal life of the organism and hence inhibits the development of the disease.

CONCLUSIONS

1. Pertussis antitoxin has been shown capable of preventing whooping cough when given early in the incubation period and prior to onset of cough, even though exposure continues.

2. Pertussis antitoxin is of little value in reducing paroxysms when the disease is established with a propulsive cough. Its evaluation in earlier stages is still under investigation.

3. Vaccine and toxoid are capable of increasing the pertussis antitoxic titer in the blood of normal children.

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ABSTRACT OF DISCUSSION

Dr. Lewis Henry Koplik, New York: A feature of great interest in this paper is the demonstration in the child of antibodies of protective or neutralizing character following the administration of the so-called antigen. With the exception of the work of Miss Lucy Mishulow on the mouse protection test and the experiments of Dr. Cohen and Dr. Scadron, read here yesterday, using Miss Mishulow's criteria, the effectiveness of materials used in the prophylaxis of pertussis has been judged in general by their capacity to prevent or to mitigate an infection the result of a hypothetically sufficient exposure. It was, if I recall correctly, the practice of Miss Mishulow, following her demonstration of the presence of a true toxin, through the Shwartzman phenomenon, to include some of the agar washings in the preparation of her vaccine. I also was able to demonstrate in Shwartzman's laboratory in 1934, in brain broth culture filtrates, a toxin of considerable potency judged by its capacity to produce the Shwartzman phenomenon. The filtrates were antigenic as evidenced by the precipitin titer developed in the serum of rabbits injected with them, but no neutralization tests were done at that time. It is important to know, and experiments should be done to demonstrate, what antitoxin titer, if any, is necessary to protect against the disease, and I think it should be emphasized that such antitoxin titer in man be developed if possible by active rather than passive immunization. One should not, I think, be led by Dr. Bullowa's figures on protection afforded by the administration of antitoxin to discard active for passive immunization, for it must be remembered that such immunity is transitory as well as sensitizing to the species of serum used. The use of antitoxic serums should, however, as the authors suggest, be helpful following exposure of sick or debilitated infants or in those who have not as yet had the opportunity to be immunized.

Dr. Jesse G. M. Bullowa, New York: It is unfortunate that pertussis is sometimes regarded exclusively as a disease of the respiratory tract. Dr. Dolgopol at Willard Parker Hospital found that, in the autopsies of 31 patients dead from pertussis, half of them showed an encephalopathy as well as pneumonia. There are many problems which require elucidation: the dose of both toxoid and antitoxin, the duration of passive immunity and also of active immunity. Recently we had a very definite demonstration concerning the value of prophylactic injection when 2 children were exposed to an older brother. One of them was slightly sensitive to rabbit serum. That was taken as an excuse for omitting the antitoxin. In a week this patient came down with pertussis. The other has remained well, having received prophylactic antitoxin.

PERSONALITY CHANGES AND BEHAVIOR DISORDERS OF CHILDREN FOLLOWING PERTUSSIS

A REPORT BASED ON THE STUDY OF FIVE HUNDRED PROBLEM CHILDREN

LOUIS A. LURIE, M.D.
AND
SOL LEVY, M.D.
CINCINNATI

Many studies have been made of the cerebral changes in pertussis. These pathologic changes have been divided into three principal groups, namely (1) hemorrhagic, (2) degenerative and (3) inflammatory.

Mental abnormalities associated with many of these neuropathologic changes have also been reported.

In the present study, attention is directed to the personality changes and behavior disorders which may occur in children many years following an attack of whooping cough suffered early in infancy. A successive group of 500 problem children who had been studied intensively at the Child Guidance Home was selected and the incidence of whooping cough in the group was noted. This was found to be 48.6 per cent, or 243 cases. Of this number, 58 children were 2 years of age or younger when the attack of whooping cough occurred, while 60 were 2 to 5 years of age and 41 were 5 years or older when the attack occurred. In the remaining 84 cases, the history was not specific regarding the age, the history merely stating that the attack occurred early in childhood.

This study concerns itself only with the group of 58 children who suffered from whooping cough at the age of 2 years or younger.

In 34, or 58.6 per cent, of the 58 children composing this group there appeared to be a definite relationship between the neurologic sequelae of the whooping cough and the behavior disorders and personality changes shown by them later in life. In other words, it was felt that the antisocial, asocial or abnormal behavior or personality distortions which these children exhibited in later years had as their bases structural changes produced in the brain during the attack of whooping cough. This conclusion was reached only after a very careful and thorough study and evaluation of all the physical, social, emotional, intellectual, constitutional and hereditary factors that directly or indirectly might have had a bearing on the problems presented by this group of children.

There were 24 boys and 10 girls in this group. This ratio of boys to girls is approximately the same as the ratio of boys to girls in the total of admissions to the Child Guidance Home.

The age range of the children at the time of their referral for study was from 4 years 4 months to 17 years 4 months. The age range according to the time of the occurrence of the whooping cough was from 3 weeks to 2 years.

Twenty-one of the children were referred for general behavior problems ranging from incorrigibility and delinquency to various forms of psychopathic behavior. Eight children were referred because of school maladjustment and 5 because of "general nervousness."

From the Child Guidance Home of the Jewish Hospital.
Read before the Section on Nervous and Mental Diseases at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1942.

The histories in all the cases showed that the children had not suffered previous to the attack of whooping cough from any other inflammatory or infectious diseases or from prenatal, natal or postnatal cerebral trauma. Furthermore, although in some of these cases there was a history of acute infectious or inflammatory diseases or injuries to the brain subsequent to the attack of whooping cough, the onset of the problem antedated these later diseases or injuries. In addition, the developmental histories of the children in many cases indicated clearly the sequential relationship between the attack of whooping cough and the retardation in their physical and mental growth as shown in the delay in the time of onset of walking and talking.

Sixteen of the children gave a history of delay in the onset of walking and talking, following the attack of whooping cough. In 2 of the children who had walked and talked before the attack of whooping cough, walking and talking were arrested immediately after the attack. Considerable time elapsed before they again walked and talked. Nine children had associated convulsive seizures. In 1 the seizures still occur.

The pertinent physical, neurologic, psychologic and psychiatric findings were as follows:

The general physical findings were essentially negative in every case. The blood Wassermann and Kahn reactions were also negative in all cases. With the exception of 1 case, the same was true for the tuberculin reactions. All the other laboratory findings were within normal limits.

Nine of the group showed various forms of endocrine disturbances.

The neurologic findings were both numerous and significant. They were present in 25 cases of the series. Thirteen showed pyramidal signs, 2 showed extrapyramidal and 10 showed combined signs.

Nerve deafness was an unusually frequent symptom, occurring in 15 children. Nine children manifested various forms of speech disturbances.

Electroencephalographic tracings were made in 6 cases, and in 5 of these the tracings were definitely abnormal. The diagnosis on the bases of the tracings was epilepsy 2, cerebral dysrhythmia of a generalized nature 2 and cortical deterioration 1.

The results of the psychometric tests were as follows: Two children had superior intelligence, 8 had average intelligence, 9 had subnormal intelligence, 5 had borderline intelligence and 10 were definitely feebleminded.

From the standpoint of behavior, the children were divided into four groups. The children in the first group showed types of behavior that were classifiable as prepsychotic and psychotic. They tended to withdraw from the group, were given to day dreaming and fantasying and were not interested in their personal appearance. A tendency to flight from reality was apparent. Emotional poverty was an outstanding symptom. Many also evidenced paranoid ideas and visual and auditory hallucinations. Eight children were placed in this group. The following case report is an example of this group:

M. E., a white girl aged 14, was referred because she presented a severe behavior problem both at home and in school. Lately she had had terrific outbursts of rage, during one of which she attempted to choke her mother and her aunt. According to the history, the girl had had severe temper outbursts since the age of 4 years. Very often she would beat her head against the wall or floor if frustrated. She had always been cruel to children and especially to animals. She was an inveterate liar. Her school work was very poor. She truanted frequently and could not get along with the teachers. According to the medical history, birth and delivery were normal. Walking started at the normal time. The girl, however, did not begin to talk until she was 4 years old. At the age of 20 months she had had a severe attack of whooping cough. There were no other childhood diseases or injuries. The medicosocial family history was not germane to the problems presented by the child.

The physical examination was essentially negative except for a systolic murmur at the apex. The girl had a 28 per cent hearing loss in the right ear and a 24 per cent hearing loss in the left ear. There were no other abnormal neurologic findings, and all the laboratory tests were negative. The endocrine status was that of hypergonadism. On the psychometric test the girl made an intelligence quotient of 70 per cent and on the social maturity test she scored 99.2 per cent.

Her behavior at the Child Guidance Home was very significant. She kept aloof from the other children and made no effort to mix with them. She was not interested in her personal appearance. She appeared to be day dreaming all the time. The girl was very suspicious and felt that every one was talking about her. She had no special interests. There were many displays of temper, especially when she was thwarted. The girl expressed many paranoid ideas, and there were evidences of auditory and visual hallucinations. She told that she heard voices which commanded her to kill. She always heard these voices when she was in bed. In her visual hallucinations she saw a small, dark woman standing in front of her also ordering her to kill. During one of her temper outbursts the girl attacked one of the workers and tried to kill her. Her conduct during the temper outbursts was extremely violent.

The second group, which consisted of 6 children, manifested progressive intellectual deterioration. However, their reactions were not merely those of feebleminded children. Their ability to achieve was even lower than their intellectual capacities. As a group they were fairly tractable. However, because of the progressiveness of the deteriorative mental process their helplessness in meeting ordinary life situations became more and more outstanding. As an example of this group, the following case is cited:

M. C., a white girl aged 17 years, was referred because she was unable to carry out simple directions and required a great deal of supervision.

Birth and delivery were normal. The girl was in perfect health until the age of 5 months, when she had a very severe attack of whooping cough. Following this illness she did not progress normally. She first began to walk and to talk when she was 2½ years old. The only other childhood diseases were measles and mumps, which occurred at the ages of 5 and 9 years respectively. Both of these illnesses were said to have been very mild.

The medicosocial family history was negative as far as the problems presented by the patient were concerned.

The general physical examination was negative except for 34.6 per cent hearing loss in the right ear and 13.3 per cent hearing loss in the left ear. There was no endocrinopathy, and all the laboratory tests were negative. The neurologic examination was also negative and the electroencephalographic tracings were normal. The girl's intelligence quotient was 64 per cent. In the past ten years it had dropped from 97 per cent to 64 per cent. On the Vineland social maturity test the girl received a social quotient of 66.6 per cent.

The girl appeared happy at the Child Guidance Home and was fairly easily managed. She seemed to be unusually interested in boys and on several occasions exposed herself. She was slovenly about herself and was untidy in the dormitory. All her reactions were extremely immature and characteristic of those of an intellectually retarded girl. Her memory for both recent and past events was poor and she was unable to

carry out simple directions. She needed constant supervision. At times her behavior was erratic, especially when she was thwarted in any way.

The third group was the largest in that it contained 17 children. The behavior of this group was of the type that is usually described as postencephalitic. The conduct and personality changes form a typical picture which is easily recognized even in the absence of positive neurologic findings. The behavior of the children was characterized by hyperactivity, extreme restlessness, destructiveness and short attention span. Inhibitions and fear of consequences appeared to be lacking. Their conduct was both impulsive and unpredictable. They were capable of experiencing remorse, but this did not seem to prevent them from repeating their destructive acts. It is interesting to note that in many instances the intellect was not involved. The following case is typical of this group:

J. L., a white boy aged 6 years, was referred because he was nervous, restless and disobedient in school. This behavior was noted when he was first enrolled in school. His academic achievement was far below his intellectual capacity. He did not mix with other children and was not liked by them. He had never gotten along well with other children, for he tended to hit them without provocation and for this reason was threatened with exclusion from school.

His birth and delivery were normal. Except for a severe case of whooping cough at the age of 5 months, the boy had never been seriously ill. His developmental history was normal.

The medicosocial family history was entirely negative as far as the boy's problems were concerned.

The general physical examination also was entirely negative. The boy had a hearing loss of 21.3 per cent in the right ear and of 18.6 per cent in the left ear. The visual examination showed a high degree of hypermetropia. The neurologic examination revealed a slight speech defect, hyperactive tendon reflexes and a positive Babinski reflex on the right. The endocrine examination as well as the laboratory tests were negative. The electroencephalographic tracing was definitely abnormal, showing a diffuse cerebral dysrhythmia without localization. On the psychometric test the boy secured an intelligence quotient of 101 per cent, classifying him among children of good average intelligence. On the social maturity test he scored a social quotient of 94 per cent.

On his arrival at the Child Guidance Home, the boy showed no fear or embarrassment. He possessed an unusual amount of fearlessness for a child of his age but was extremely restless and hyperactive. His attention span was very short. He was not able to concentrate on any one task for any length of time. He was demanding and aggressive and constantly annoyed the other children. He was extremely noisy, yelling all the time, and very often he was observed spitting continuously. He was very cruel to the younger children, and at times he even attacked older children without any apparent provocation. His conduct was unpredictable. He had severe temper tantrums, and at such times he tried to strike every one near him and was very destructive. At such times also it was impossible to reason with him. At other times, however, he was very tractable and polite and did willingly what he was told. He made friends with the other children very easily, but after playing with them nicely for a while would suddenly slap them without any provocation whatever.

The fourth group, in which there were 3 children, showed a combination of two or more of the aforementioned types of behavior. This is illustrated in the following case:

V. H., a white girl aged 4½ years, was referred because she did not talk, had many temper tantrums and seemed physically and mentally retarded. The temper tantrums started at the age of 3 years and had gradually increased in frequency and severity. The girl had never been able to compete with other children her age, either mentally or physically.

She was born to a primipara, birth and delivery being normal. Dentition began at the normal age. At 1 year of age she had a very severe attack of whooping cough, following which her development was definitely delayed. She did not start to walk until almost 2 years and up to the present has not talked.

The medicosocial family history was entirely negative as far as the problems presented by the child were concerned.

Except for some general physical underdevelopment, the physical examination was also negative. The laboratory findings were normal. The neurologic examination revealed decidedly diminished patellar reflexes and a positive Babinski sign on the left. On the psychometric examination the girl made a mental age between 1½ and 2 years, thus giving her an intelligence quotient of 45 to 50 per cent and classifying her as definitely feebleminded. The girl's social quotient was 46.9 per cent.

While at the Child Guidance Home, her behavior was very immature. She was dependent in everything. Her table manners were poor. She took great delight in squashing the food through her fingers and breaking the bread into small pieces and throwing them on the floor. She used her hands to convey the food to her mouth even though she was well able to use the fork. She was obstinate and stubborn, and any thwarting was met with a severe temper tantrum on her part. She was exceedingly restless, had a short attention span and was not able to occupy herself constructively. She was intellectually retarded and was unable to carry out simple commands. The girl did not talk at all but constantly made gurgling sounds. She slept well but suffered from nocturnal enuresis. Soiling occurred every day.

COMMENT

Whooping cough when occurring early in infancy may have serious consequences, as it may prevent the normal intellectual and personality development of the child. This statement is based on the results of the present study, in which 34, or 58.6 per cent, of a group of 58 children who had had whooping cough before the age of 2 years (6.8 per cent of an unselected group of 500 problem children) showed definite behavioral, intellectual and personality changes later in life, apparently as a result of the neuropathologic sequelae of whooping cough.

At this point it should be noted again that in this series of cases all other possible exciting or contributory factors, such as hereditary influences, birth trauma, other acute diseases or injuries and psychologic and environmental factors have been ruled out as major factors.

Twenty-four of these children were boys and 10 were girls. This ratio of boys to girls is the same as the ratio of the general admissions to the Child Guidance Home. From this it would appear that sex is no factor in this connection.

In the majority of cases the attack of whooping cough occurred between the third and the seventh month of life, although the majority of the children were first referred for study between the ages of 10 and 11 years. In some of the cases there was even a longer interval between the age when the attack of whooping cough occurred and the age when the problem first became noticeable or pressing. The insidiousness of the progression of the disastrous psychopathologic effects of whooping cough thus becomes apparent. This also points to the need for a careful medical history when studying behavior disorders of children. Many obscure cases of behavior disorders may become understandable if evaluated in the light of the history of an attack of whooping cough early in infancy.

The types of behavior problems presented by these children were not characteristic. They did not differ from the general run of problems presented by children

studied at Behavior Clinics. The majority of the children (21) were referred because of general behavior problems ranging from incorrigibility to psychopathic types of behavior; 8 were referred because of school maladjustment and 5 for various physical or nervous disorders.

The general physical findings were not significant. The results of the laboratory examinations were significant only from the standpoint of the negative findings.

Nine of the children showed various forms of endocrine involvement. This, however, is not particularly significant, as this percentage is in accord with the percentage of endocrinopathies occurring among all the children studied at the Child Guidance Home.

A striking and characteristic finding in many of the cases was the history of delay in the time of onset of walking and talking. Sixteen of the children were pronouncedly delayed in these respects. Two children following the attack of whooping cough stopped walking and talking, whereas previously they had walked and talked. In 9 cases there were associated convulsions. Only 1 child still had convulsions at the time of this study. These facts would tend to point to definite organic changes in the brain produced during the course of the disease.

Further proof of the pathologic involvement of the nervous system was shown by the large number of cases (25) in which positive neurologic findings were still present. These consisted of both pyramidal and extrapyramidal lesions.

Of 6 cases in which electroencephalographic tracings were made, 5 were definitely abnormal. Of these, 2 could be classified as epilepsy, 2 as general cerebral dysrhythmia and 1 as cortical deterioration. This is too small a number to permit of any generalization; however, the fact that in 5 cases the electroencephalograms showed abnormal tracings appears to indicate that irreparable brain damage may occur during the course of the disease.

Additional proof for this assumption is furnished by the findings of Evans and Maltby.[1] They studied the pneumoencephalograms of 6 children who presented either behavior disorders or neurologic sequelae due to whooping cough suffered in early infancy. All the pneumoencephalograms showed definite cerebral changes, principally in the form of cortical atrophy.

The frequent occurrence of nerve deafness and various forms of speech disturbances is especially worthy of mention. Fifteen children suffered from nerve deafness, while 9 manifested some form of speech defect. The implication of this in connection with problems of school maladjustment are very obvious.

The psychologic and psychiatric findings were extremely significant. On the Stanford revision of the Binet test, 24 of the children rated below average in intelligence. Of this number 9 had subnormal intelligence, 5 had borderline intelligence and 10 were definitely feebleminded. The incidence of mental deficiency in this series of cases was much larger than in the entire group of children studied at the Child Guidance Home. This again points to possible cerebral injury.

All the children showed various forms of psychopathic types of behavior, which were divided into four distinct categories. The first group of children showed types of behavior which were classifiable either as prepsychotic or definitely psychotic. Eight children were so classified. Paranoid ideas, visual and auditory hallucinations and a tendency to withdraw from reality were among the outstanding characteristic symptoms exhibited by this group.

In the second group were placed those children (6) who showed progressive intellectual deterioration. These children for the most part were very tractable, but because of the progressive nature of the mental retardation they were unable to make normal adjustments to their life situations.

The third and largest group was composed of seventeen children who exhibited the typical postencephalitic type of behavior. The outstanding behavioral characteristics of this group were extreme motor restlessness, impulsiveness with a tendency to destructive activity and unpredictable behavior. Characteristically, very few of these children showed any intellectual retardation. As aptly expressed by Kahn and Cohen,[2] this condition appears to be "an organic driveness of brain stem origin."

The fourth group consisted of 3 children who showed a type of behavior that was a combination of two or more of the foregoing types.

The manner in which whooping cough may produce such psychic and behavioral changes may be inferred from the results of neuropathologic studies of the brains of infants dying from whooping cough.

As early as 1842, neurologic complications in pertussis were noted and reported. However, it was not until 1899 that the results of the first autopsies of children dying from whooping cough and its complications were reported. West [3] and Luce [4] were the first to demonstrate minute hemorrhages, edema and cellular degeneration of the brain in their cases, and this hemorrhagic basis for the neurologic complications of pertussis was generally accepted for many years. In 1924 Husler and Spatz [5] demonstrated irreversible degenerative changes of the cortex, dentate nucleus and corpus striatum without hemorrhage in 2 patients dying of whooping cough complicated by convulsions. They described a typical regressive change in the nerve cells of the cortex, with loss of staining properties in all structures of the cell except the nucleus. This study aroused considerable interest, as it provided the first definite evidence against a hemorrhagic basis as the sole cause for the neurologic complications of pertussis and suggested an encephalitic foundation for their occurrence. Jochims [6] in 1928 confirmed the Husler and Spatz findings in a case at autopsy; however, he suggested the term "whooping cough encephalopathy." In 1930 Hiller and Grinker [7] made a comprehensive study of the cerebral complications of whooping cough and attempted to explain the occurrence of these complications by applying the theory of "stasis and prestasis." According to these authors "there is apparently a gradual transition from a repairable disturbance of brain function on a functional circulatory basis (the explanation of certain transient nervous symptoms) to permanent defects." Chornyak [8] stresses the role of

1. Evans, J. P., and Maltby, G. L.: Personal communication to the authors.

2. Kahn, Eugen, and Cohen, L. H.: New England J. Med. **210**: 748 (April 5) 1934.

3. West, S.: Brit. M. J. **1**: 157, 1889, cited by Nelson, R.: J. Pediat. **14**: 1 (Jan.) 1939.

4. Luce, H.: Deutsche Ztschr. f. Nervenh. **12**: 272, 1898, cited by Nelson.

5. Husler, J., and Spatz, H.: Ztschr. f. Kinderh. **38**: 428, 1924.

6. Jochims, J.: Ztschr. f. Kinderh. **45**: 326, 1928.

7. Hiller, Friedrich, and Grinker, R. R.: Functional Circulatory Disturbances and Organic Obstruction of the Cerebral Blood Vessels, Arch. Neurol. & Psychiat. **23**: 634 (April) 1930.

8. Chornyak, John: The Structural Changes Produced in the Human Brain by Oxygen Deprivation (Anoxemia) and Their Pathogenesis, Ann Arbor, Mich., Edwards Brothers, Inc., 1938.

anoxemia occurring during the course of pertussis and other acute infectious diseases of childhood in the production of structural changes in the brain. Dolgopol,[9] in a recent article, after reviewing the entire literature and reporting her own experiences, states that "the changes in the brain in pertussis are apparently noninfectious. They are most likely of circulatory origin and consist of edema, ischemic cellular degeneration, multiple hemorrhages (usually small) and lymphocytic plugs in veins and capillaries. On rare occasions a secondary 'encephalitic reaction' may be observed in addition to the aforementioned changes." She concludes that the term "pertussis encephalopathy" proposed by Jochims "covers most adequately these conceptions and, in the present state of knowledge about the pathogenesis of lesions in the brain in pertussis, should be the term of choice for the cerebral complications in that disease."

Although from the clinical standpoint it was possible to divide the types of abnormal behavior exhibited by the children in this series into four principal groups, namely (1) prepsychotic and psychotic, (2) intellectual deterioration, (3) postencephalitic and (4) combined, no definite correlation could be made between a specific type of behavior and a specific type of brain involvement. In other words, with the possible exception of some of the postencephalitic cases it was impossible to tell from the clinical picture alone whether the types of behavior exhibited by the children were due to either circulatory, hemorrhagic or inflammatory changes in the brain as a result of the whooping cough.

CONCLUSIONS

From the data presented in this study the conclusion seems justifiable that whooping cough occurring early in infancy may lead to the development of severe behavior problems, intellectual deterioration, personality distortions and psychotic manifestations later in life. In all probability these psychopathologic conditions have as their basis structural changes in the brain produced during the attack of whooping cough.

ABSTRACT OF DISCUSSION

DR. A. R. VONDERAHE, Cincinnati: This report calls attention to the probable serious consequences of whooping cough in children under the age of 2. The personality changes and behavior disorders noted in some of these children calls for a thorough study of the underlying pathologic alterations and suggests that even in adult life a complete anatomic analysis of the central nervous system may very well show changes. With psychotic and psychopathic persons in adult life we tend to forget such things as whooping cough in infancy. In making a survey of the literature on pathologic involvements of the hypothalamus, pathologic reports were found to be generally inadequate in stating the exact localizing anatomic diagnosis. However, several clinical cases of diabetes insipidus with alteration of gonads and emotional changes following whooping cough were encountered: Gayler reports a case of diabetes insipidus which was preceded by whooping cough; in this case infantilism also developed. In Turner's case there was diabetes insipidus plus adiposogenital dystrophy following whooping cough. Daneri reported a case of diabetes insipidus associated with drowsiness, depression, convulsions and psychic changes following whooping cough. These cases all suggest an involvement of the anterior part of the hypothalamus and of the descending pathways from this area to the pituitary gland. I should like to ask Dr. Lurie whether any of the case histories at the time of the whooping cough indicated cerebral or perhaps even hypothalamic involvement, thus forecasting the future hazard of the child? It may be noted that multiple hemorrhages and ischemic cell changes as well as other circulatory difficulties constitute a feature of the pathologic alterations in whooping cough. In this connection it might be well to inquire how severely ill these babies were, whether there was a great deal of vomiting, how well nutrition was maintained and whether or not some of the vascular changes may have been of the Wernicke type and traceable in part to nutritional deficiency, particularly vitamin B or calcium deficiency.

DR. CHARLES BRADLEY, East Providence, R. I.: At the Bradley Home in East Providence we have been going over our case records of problem children to correlate the incidence of asphyxiating disease in the first two years of life with specific behavior traits and electroencephalographic tracings. We have been impressed for some years with the importance of such asphyxiating illness in the early years of childhood, probably before 2 years. Dr. Lurie's series of electroencephalographs is very short, and the incidence of abnormalities he reports is no higher than the incidence of electroencephalographic abnormalities in problem children reported in the literature. My work is in pediatrics, and those of us who take care of babies with whooping cough under 2 years are impressed by the seriousness of the disease at that age. I should like to know how the incidence of whooping cough in the first two years of life in this series compares with the incidence of whooping cough in the general population as gathered from the public health reports.

DR. LOUIS A. LURIE, Cincinnati: In answer to Dr. Vonderahe's question relative to whether in my knowledge case histories showed any cerebral injury, I cannot say, because these children were referred to us many years after the attack of whooping cough, and we have no reports from the physicians who attended the children at that time. Hence we do not know whether any neurologic examination was made at that time. I agree with Dr. Bradley that anoxemia of the brain in infants may be a potent factor in the production of cerebral damage. I was interested in what Dr. Freeman had to say in his discussion of the previous paper, namely that "the greater the destruction of the brain in shock therapy, the better the results." Here we see the reverse. Where there has been destructive action on the brain as a result of an infection, personality changes of an undesirable type may follow. When I said that all other factors had been ruled out as causative influences, I specifically stated that what I meant was that they had been ruled out as major causes. In studying behavior disorders and personality changes, we know that a multiplicity of factors are as a rule involved in every case. The relative importance of various factors, however, is not the same. We can easily differentiate between major and minor factors, especially where we are sure, as in the cases reported in this paper, what produced the cerebral disorder. Because of the large number of variables, it was impossible to compare the incidence of whooping cough in our series with that in the population at large.

9. Dolgopol, Vera B.: Changes in the Brain in Pertussis with Convulsions, Arch. Neurol. & Psychiat. **46**: 477 (Sept.) 1941.

The Danger in the Use of the Tourniquet.—The lesson the war taught us about the arrest of hemorrhage when met with in a case of compound fracture, or occurring independently of that injury, undoubtedly was the danger attending the use of the tourniquet. To allow a patient to whose limb a tourniquet has been applied to pass out of your sight, or worse still, from under your care, came to be looked on as professional disgrace. The advice we gave to the regimental medical officer dealing with a case of severe bleeding from a recent wound and to the field ambulance officer doing duty in a crowded regimental aid post was, in all cases where bleeding would not cease from a natural arrest, or could not be controlled by the local pressure of a shell dressing, to grasp the bleeding points with pressure forceps and send the patient down with these hemostats attached to his wound.—Wade, Henry: Emergency Surgery in the Field, from War and the Doctor, edited by J. M. Mackintosh, M.D., Baltimore, William Wood & Co., 1942.

POSTOPERATIVE ATELECTASIS

CLINICAL ASPECTS AND A REVIEW OF CASES

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The surgical importance of atelectasis is obvious; it may complicate convalescence from any operation and it is the most commonly encountered pulmonary complication after abdominal operations. Interest in atelectasis is not new. Knowledge of postoperative atelectasis, however, has been acquired in comparatively recent years.

SOME NOTEWORTHY CONTRIBUTIONS

As long ago as 1850 Gairdner [1] presented the belief that atelectasis could be produced by obstructing a major bronchus with thick, viscid mucus. William Pasteur [2] in 1910 recognized and described the clinical features of this condition. Lee and Tucker [3] in 1925 were first to demonstrate by bronchoscopy the mechanism of postoperative atelectasis. The cause of atelectasis in his case was found to be complete obstruction of the bronchi of the atelectatic lung with thick, tenacious secretion. Lemon [4] in 1926, working with dogs, showed that secretion in the mouth was readily aspirated into the tracheobronchial tree in the course of general anesthesia. The position of the animal when anesthetized had an effect on aspiration of the secretion. The risk of aspiration decreased when the head was lowered through a horizontal to a declined plane. It vanished when the full Trendelenburg position was reached.

CAUSES

It is not surprising to learn, then, that postoperative atelectasis almost always develops as a result of decreased pulmonary ventilation and inadequate endobronchial drainage. These might be called the immediate causative factors, which in turn depend on the following remote causes: (1) the effect of the anesthetic agent on the patient, (2) the position of the patient at the time of operation and (3) the type of operation performed. The manner in which each of these factors operates in most instances to produce atelectasis can be seen in one or more of the first three illustrations.

The patient represented in figure 1 is assumed to be undergoing an operation on the upper part of the abdomen and to be under general anesthesia. The laryngeal and cough reflexes are abolished by the anesthesia, making it possible for infected secretions from the nasopharynx, mouth and hypopharynx to be aspirated into the tracheobronchial tree. With the patient recumbent, the course of the trachea as it descends is somewhat posterior. The course of the right main bronchus and of the bronchus to the lower lobe of the right lung is more direct than that of the corresponding bronchi on the left side. Thus the infected secretions usually gravitate to the right side. The effectiveness of bronchial ciliary action is reduced by the overwhelming effect of the mass of secretion. The abdominal incision reduces vital capacity and the effectiveness of cough by weakening the abdominal muscles which take an important part in normal respiration and coughing. During this type of operation, retraction is made upward, to the right and to the left, to secure adequate exposure. Some of this force is transmitted to the under surface of the liver, which compresses the diaphragm and the lower lobes of the lungs. The effect is usually greatest on the lower lobe of the right lung. The splinting of the diaphragm and the compression of the lower lobes cause decreased ventilation. The result is a decrease in normal bronchial respiratory movements and impairment of endobronchial drainage. Thus there is a tendency for abnormal secretions to stagnate in the tracheobronchial tree. If these are not removed atelectasis may occur.

Figure 3 represents some of the conditions present during spinal anesthesia. The effects of making an abdominal incision and of retraction during operation, not shown in figure 3, are the same as those represented in figure 1. Spinal anesthesia, given for upper abdominal or renal operations, may cause motor paralysis up to the fourth thoracic segment. The resulting paralysis of the lower intercostal muscles causes reduced pulmonary ventilation, which favors stagnation of bronchial secretions. Atelectasis may follow.

The abnormal forces that are present during certain operations on a kidney or on a lung are represented in figure 2. Here the patient lies on the side opposite to the site of operation. The lower side is splinted by the weight of the body. Secretions gravitate into the lower lung. These last two factors favor the development of atelectasis in this lung.

PREVENTION

Prevention of atelectasis is of primary importance. In a recent article by one of us [5] the following sentences appeared:

> In cases in which suppurative disease of the lung is secondary to a malignant lesion obstructing the bronchus, it is advisable to perform bronchoscopic aspiration of the lung at least once and, if necessary, several times before operation, to free the lung of as much of the infected secretions as possible. As I have said previously, in some instances the general condition of the patient is markedly improved after removal of the toxic secretions so that a patient who may have been believed clinically to have an inoperable lesion will improve sufficiently to withstand surgical treatment. In cases in which an extensive suppurative disease is associated, I believe that it is advisable to aspirate the secretions by the use of a bronchoscope after the patient has been anesthetized on the operating table but before the operation is started. This will prevent the secretions from going into the opposite lung when the diseased lung is manipulated at the time of operation.

An attempt should be made to avoid prolonged anesthesia because the longer anesthesia lasts the more opportunity there is for secretion to collect. During general anesthesia the nose, mouth and hypopharynx should be kept free from excessive secretion by aspiration through a catheter. Intratracheal methods of anesthesia tend to prevent aspiration of secretions. If a Magill tube of large size is inserted under direct vision before operation, the rima of the glottis can be fitted

Read before the Section on Anesthesiology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1942.

From the Division of Medicine (Dr. Schmidt), the Section on Anesthesia (Dr. Mousel) and the Division of Surgery (Dr. Harrington), the Mayo Clinic.

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snugly.[6] If the type of operation will permit, the Trendelenburg position should be used, since this will allow secretions to gravitate to the mouth, where they can be easily removed. The head of the operating table should be inclined 10 degrees or more to overcome the normal posterior slope of the trachea[7] as it descends. In the

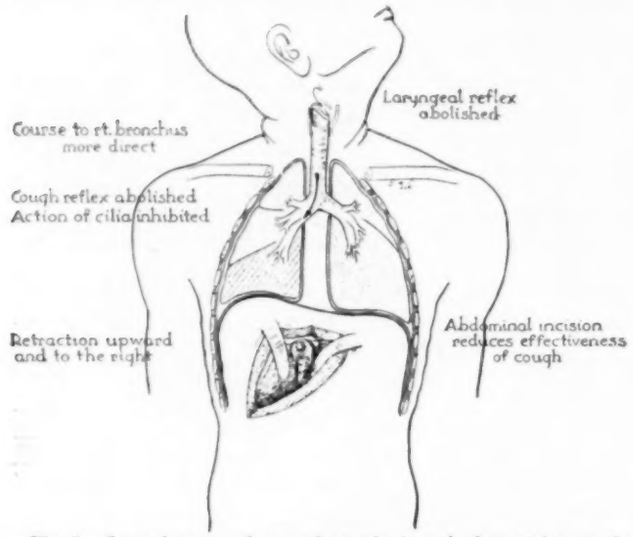
Laryngeal reflex abolished
Course to rt. bronchus more direct
Cough reflex abolished Action of cilia inhibited
Retraction upward and to the right
Abdominal incision reduces effectiveness of cough

Fig. 1.—Some features of general anesthesia and of operation on the upper part of the abdomen which tend toward production of postoperative atelectasis.

course of the operation abnormal amounts of secretion in the tracheobronchial tree should be removed promptly by bronchial catheter or bronchoscopic aspiration.

It is our practice to give the benefit of certain precautionary measures to all patients who have undergone lobectomy or pneumonectomy as soon as the operation has been completed. The incidence of pulmonary collapse in this group has been extremely low.

To quote again from the paper on pneumonectomy:[5]

Preventive supportive measures should be taken immediately after the operation before the patient leaves the operating table. I believe it is advisable to perform bronchoscopic aspiration of the remaining lung in all cases while the patient is still anesthetized. It is an essential procedure in those cases in which there has been an excessive amount of mucus or suppurative disease of the affected lung. In all cases a roentgenogram should be taken while the patient is on the operating table and immediately after the wound is closed, and it should be developed and examined immediately. If there is any evidence of atelectasis in the remaining lung, bronchoscopic aspiration of the lung is performed on the operating table. Following this aspiration, another roentgenogram is made immediately and examined. If the condition is improved, the patient is removed from the operating room. If it is not, bronchoscopic aspirations are performed until the air passages are entirely free of secretions. It is most essential not to remove the patient from the operating room until the air passage of the remaining lung is entirely clear. In some instances it may be advisable to keep the patient in the operating room until he has fully recovered from the anesthetic and until the cough reflex is reestablished.

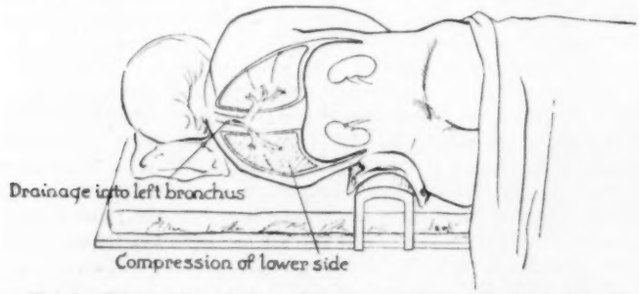

Fig. 2.—The position of the patient in some operations tends to cause postoperative atelectasis.

After the patient has returned to his room, he should be turned frequently and instructed how to perform deep breathing exercises at regular intervals. Hyperventilation with a mixture of 5 per cent carbon dioxide and 95 per cent oxygen is a valuable method of stimulating deep breathing. It should be given at regular intervals in the immediate postoperative stage by one who is experienced in its use.

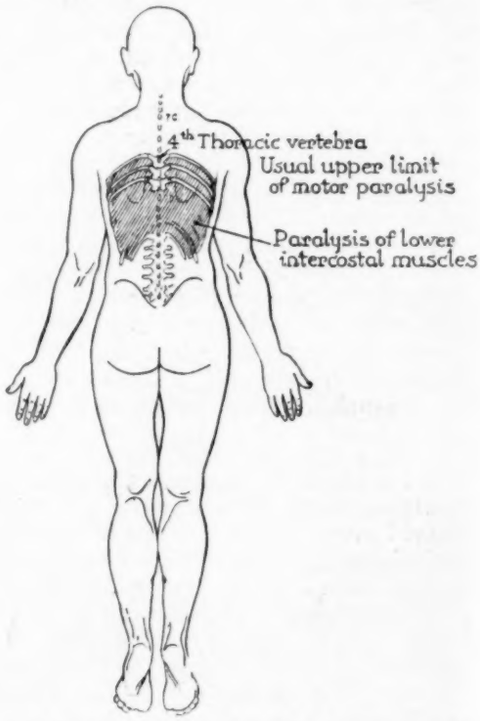

Fig. 3.—Some effects of spinal anesthesia which favor postoperative atelectasis.

In the same stage, and throughout convalescence, abdominal binders should be kept below the level of the thorax. If they are applied too high they will restrict the respiratory excursions of the thoracic wall. If abnormal amounts of tracheobronchial secretion accumulate they should be coughed up. Nurses should be instructed in how to support the abdominal wall of the patient during coughing. This support lessens the pain and increases the effectiveness of coughing. Although narcotics are necessary in the postoperative period for relief of pain, excessive amounts should be avoided, since the drugs depress the respiratory center and the cough reflex.

Elective surgery should not be done in the course of, or soon after, an acute infection of the respiratory tract, since the danger of postoperative pneumonia is increased under such conditions. A period of at least ten to fourteen days, free of symptoms, should elapse following an acute infection of the respiratory tract before any elective operation is done. At times it is not possible to avoid operating on a patient who has

6. Lundy, J. S.; Tuohy, E. B.; Adams, R. C.; Mousel, L. H., and Seldon, T. H: Annual Report for 1941 of the Section on Anesthesia: Including Data on Blood Transfusion, Proc. Staff Meet., Mayo Clin. **17**: 225-238 (April 15) 1942.

7. Haight, Cameron, and Ransom, H. K.: Observations on the Prevention and Treatment of Postoperative Atelectasis and Bronchopneumonia, Ann. Surg. **114**: 243-262 (Aug.) 1941.

an infection of such nature and, under these conditions, extremely close observation is necessary. The same is true for any patient who gives a history or other evidence of a chronic infection of the bronchial or pulmonary system, such as bronchitis, asthmatic bronchitis or bronchiectasis. In the presence of the last named condition elective operation should be postponed until the best possible bronchial drainage has been established by postural methods combined with bronchoscopic aspiration. Patients who have bronchiectasis should be subjected to bronchoscopy immediately after operation.

TREATMENT

In most instances, atelectasis can be successfully treated by hyperventilation with carbon dioxide and oxygen and by performing deep breathing exercises.

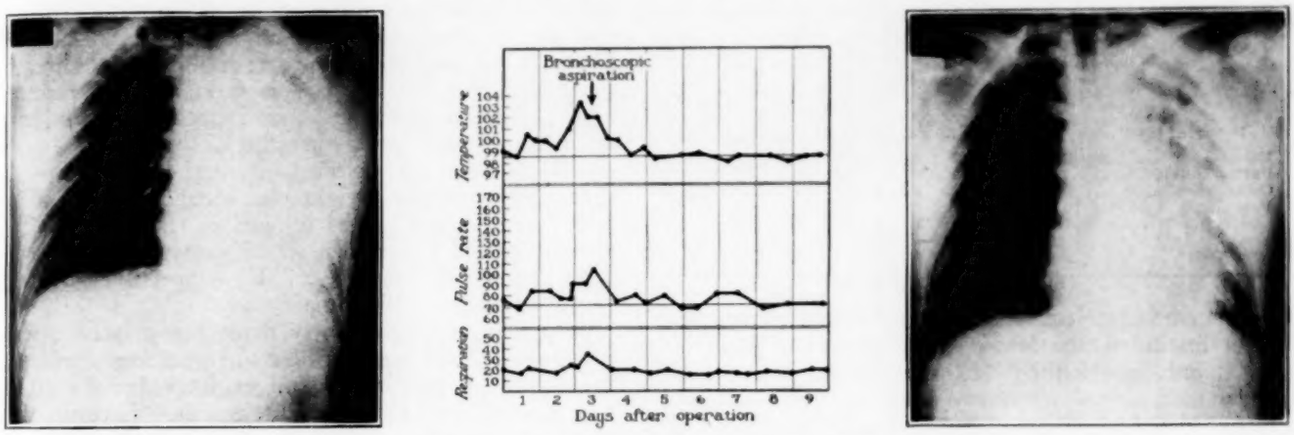

Fig. 4.—Atelectasis of the left lung occurred after appendectomy for acute gangrenous appendicitis. Bronchoscopy revealed 50 cc. of mucopus in the left main bronchus; this was aspirated. Recovery was prompt. The roentgenogram on the left was taken just before bronchoscopy; that on the right was taken immediately after bronchoscopy. There already is evidence of reexpansion of the involved lung. As shown in the chart, the temperature, pulse and respirations promptly reached normal.

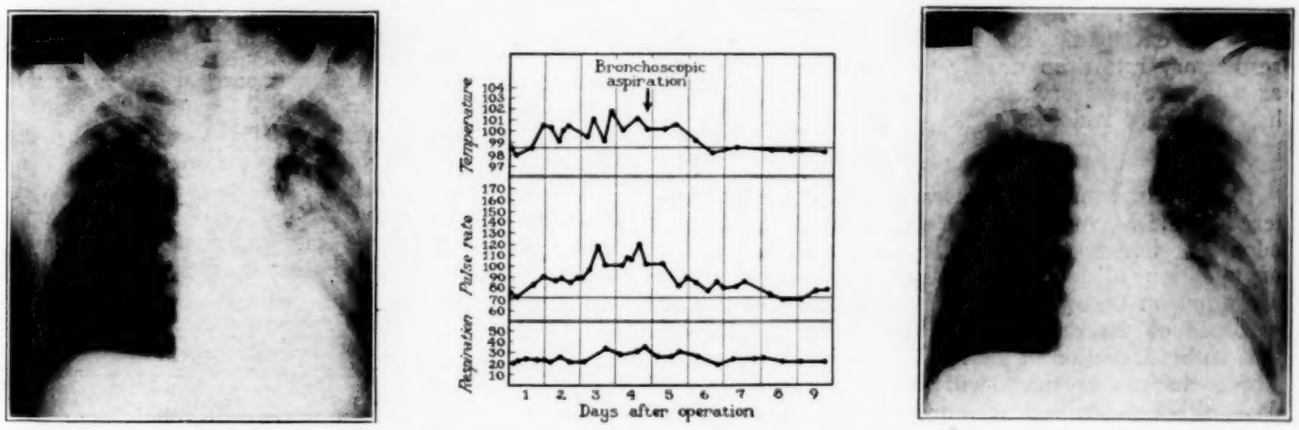

Fig. 5.—Forty-eight hours after a right pelviolithotomy was performed for renal stone, atelectasis of the left lung was recognized. Bronchoscopy revealed that the left main bronchus was filled with mucopus. About 60 cc. of this material was aspirated and sulfathiazole was given. The roentgenogram on the left was taken just before bronchoscopy; that on the right was taken seventy-two hours later and gives evidence of some residual infiltration in the left lung. As shown in the chart, the temperature, pulse and respirations responded to treatment.

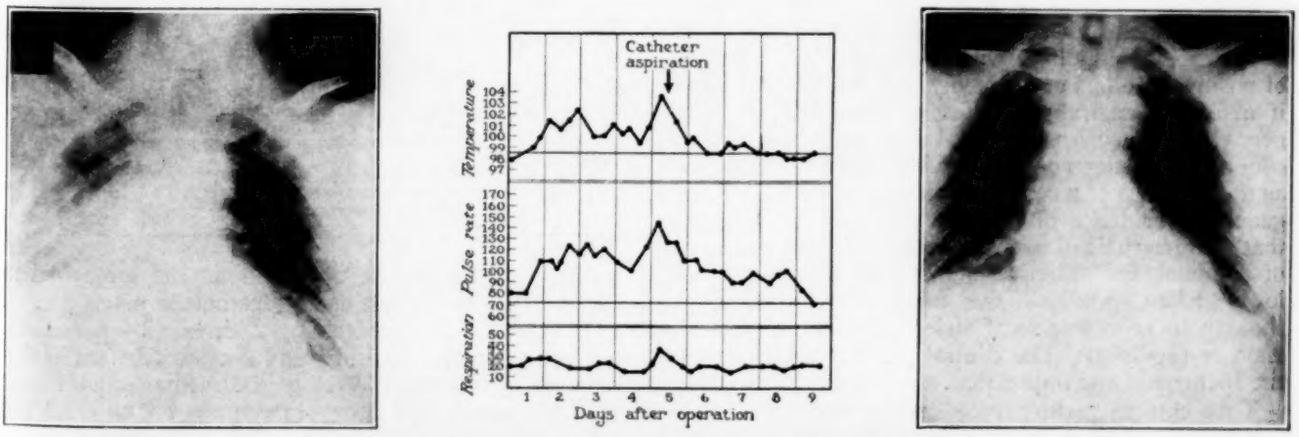

Fig. 6.—The patient represented here had severe hypertension. Three years before he came to the clinic he had a cerebrovascular accident with resulting right hemiplegia. Examination revealed residual right hemiparesis. Left hydronephrosis also was found and left nephrectomy was performed. Atelectasis developed in the right lung. On aspiration of the right lung, by means of a bronchial catheter, a large amount of blood tinged mucopus was obtained. The results of treatment were excellent. The roentgenogram on the left was taken before aspiration and that on the right after aspiration. The chart makes evident the effect of treatment on the temperature, pulse and respirations.

Abnormal amounts of bronchial secretion should be raised by coughing. If prompt relief of the complication is not obtained by these methods, bronchial catheterization or bronchoscopic aspiration should be done. The latter procedure is preferable because it is done under direct vision.

TABLE 1.—*Pulmonary Involvement*

Degree of Involvement	Right Lower Lobe	Right Middle Lobe	Right Upper Lobe	Right Lower and Middle Lobes	Entire Right Lung	Left Lower Lobe	Left Upper Lobe	Entire Left Lung	Right Lower and Left Lower Lobes
Minimal localized infiltration..	8	0	0	0	0	2	0	0	9
Partial collapse.....	15	0	0	0	5	2	0	5	0
Complete collapse.....	1	0	0	0	3	0	1	7	0
Pneumonia secondary to atelectasis.....	14	0	1	1	1	3	0	1	5
Total.....	38	0	1	1	9	7	1	13	14

The earlier atelectasis is recognized and proper treatment instituted, the less danger there is of secondary pneumonia developing. In most cases postoperative pneumonia arises secondary to atelectasis. If pneumonia develops, chemotherapy should be given, and the drugs of choice at the present time are sulfathiazole and sulfadiazine. If postoperative atelectasis goes unrecognized for a long period, pulmonary abscess may develop.

The results of early treatment of postoperative atelectasis are excellent. The temperature, pulse rate and respiratory rate drop rapidly to normal levels as soon as adequate endobronchial drainage has been established (figs. 4 and 5).

REVIEW OF CASES

In selecting for study cases of atelectasis encountered at the Mayo Clinic in 1941, certain criteria were adopted. For instance, routine postoperative physical examination of many patients who have undergone operation on the upper part of the abdomen will elicit evidence of decreased ventilation of the right lower lobe and of elevation of the right side of the diaphragm. These changes at times will persist for four or five days, although the patient is making what is considered a normal postoperative recovery. This type of case is not included in the series under discussion. Moreover, cases in which the lungs were roentgenologically negative were excluded.

There remained 84 cases of partial or complete atelectasis. This group included cases in which, first, the roentgenologic findings were positive. The incidence of positive findings undoubtedly would have been higher if in every surgical case postoperative thoracic roentgenograms had been made. As the study actually was conducted, roentgenograms usually were made as soon as the presence of a complication was suspected. Roentgenologic evidence of such complication ranged from that characteristic of massive collapse to that expressive of minimal infiltration demonstrable in one or both lower lobes, provided the minimal infiltration was thought to represent focal atelectasis. There was also another provision: The clinical picture had to support the roentgenologic impression.

This clinical picture consisted of restricted movement on the involved side; at least this sign usually was seen. Impairment to percussion and decreased breath sounds over the involved lung usually were found. The diaphragm was elevated and the mediastinum was shifted toward the involved side. After the bronchial secretion had been removed by cough or bronchoscopic aspiration and the atelectatic lung was expanding, it was not uncommon to elicit bronchial breathing in spite of the fact that the temperature, pulse and respiratory rate had become normal.

In table 1 is recorded the situation and degree of pulmonary involvement.

Fifty-eight of the patients (69 per cent) were men and 26 (31 per cent) were women. The usual explanation for the high incidence among men is that men are predominantly diaphragmatic and abdominal breathers and their vital capacity is more sharply reduced after abdominal operations than is that of women, who are predominantly costal breathers.

The average age of the men in the group was 50 years; their average weight was 158 pounds (72 Kg.) and their average height 68 inches (203 cm.). The average age of the women was 50 years; their average weight was 148 pounds (67 Kg.) and their average height 63 inches (190 cm.).

A review of the routinely made preoperative roentgenograms of the thorax failed to reveal any significant consistent findings which might have been used to foretell the development of atelectasis. Certain complicating conditions were present in some cases. One patient, whose operation was for ruptured ectopic pregnancy, had an acute cold at the time of operation. Four patients gave the history of having had a recent cold, 12 had a chronic cough, 4 had asthmatic bronchitis, 3 had emphysema, 1 had bronchiectasis, 1 gave a history of coronary thrombosis, 1 had hemiplegia, 1 had cardiac decompensation, 1 had coronary sclerosis with a left bundle branch block and 2 had diabetes mellitus.

The incidence after different types of surgical operation was as follows: biliary operations 31 cases (36.9 per cent), gastric operations 18 cases (21.4 per cent), operations on the colon 9 cases (10.7 per cent), operations on the kidney 8 cases (9.5 per cent), repair of inguinal and femoral hernia 6 cases (7.1 per cent), a biliary and a gastric operation on the same patient 3 cases (3.6 per cent), operations on the pelvis 3 cases (3.6 per cent), appendectomy 2 cases (2.4 per cent), operations on the thyroid gland 2 cases (2.4 per cent), removal of a dermoid cyst of the mediastinum 1 case (1.2 per cent), left lower lobectomy 1 case (1.2 per cent).

TABLE 2.—*Operations Performed with Patients Lying on the Side*

Diagnosis	Operation Performed	Type of Anesthesia Used	Site of Atelectasis
Right renal calculus	Right pelviolithotomy	Spinal	Entire left lung
Tuberculosis of right kidney	Right nephrectomy	Spinal	Entire left lung
Hypernephroma of right kidney	Right nephrectomy	Ethylene and ether	Entire left lung
Acute right hydronephrosis	Right nephrectomy	Nitrous oxide and ether	Left lower lobe
Left pyonephrosis	Left nephrectomy	Spinal	Right lower lobe
Left hydronephrosis	Left nephrectomy	Nitrous oxide and ether	Entire right lung
Left hydronephrosis	Plastic operation on left kidney and left nephrectomy	Spinal, nitrous oxide and pentothal sodium	Right lower and middle lobes
Right psoas abscess	Exploration of right perinephric region; drainage of right psoas abscess	Spinal	Entire left lung

In some of the cases clinical evidence of pneumonia developed secondary to atelectasis. All patients received chemotherapy in addition to the measures pre-

viously described to promote better pulmonary ventilation and bronchial drainage. The drugs usually given were sulfathiazole and sulfadiazine.

In all cases in which atelectasis followed operation on the kidney the lung affected was the one corresponding to the side on which the patient was lying and which was being splinted by the weight of the body during operation (table 2 and fig. 6). The right lung, and particularly its lower lobe, was involved in the highest number of cases after operations on the upper part of the abdomen. The right lower lobe was involved alone in 45 per cent of all cases.

The results of treatment in the entire group were good. All patients recovered. When treatment was started within forty-eight hours after onset of the complication the results were excellent. If the complication existed seventy-two hours or longer before treatment was begun, recovery was slower because usually by that time there was clinical evidence of secondary pneumonia.

SUMMARY

Atelectasis may complicate convalescence from any operation; it is the most commonly encountered pulmonary complication following abdominal operations. It almost always occurs as the result of decreased pulmonary ventilation and inadequate endobronchial drainage. The effects of the anesthetic agent on the patient, the position of the patient at the time of operation and the type of operation performed play important parts in the causation of this complication. Bronchoscopic aspiration is useful both in preventing and in treating postoperative atelectasis.

In a series of 84 selected cases of atelectasis, 58 of the patients were men and 26 were women. The average age of both men and women was 50 years. There were no preoperative roentgenographic signs by which likelihood of postoperative atelectasis could have been foretold. In 52 of the cases the operations were on the biliary tract or stomach, in 9 cases on the colon and in 8 cases on the kidney or its surrounding tissues; the number of cases representing other operations probably were not significant. In all cases in which atelectasis followed operation on the kidney, the lung affected was the one corresponding to the side on which the patient was lying. If treatment was started within forty-eight hours after the complication occurred results were excellent. If the complication existed for seventy-two hours or longer before treatment was begun, recovery usually was slower, since secondary pneumonia generally had developed.

ABSTRACT OF DISCUSSION

DR. PHILIP D. WOODBRIDGE, Philadelphia: Dr. Schmidt and his associates are to be congratulated on the absence of mortality in their series. There should be standing orders that, as soon as any rattling of fluid is heard in the respiratory tract, opiates and other respiratory depressants be omitted and that the patient be turned from side to side frequently. Whenever atelectasis is suspected, the patient should be turned with the affected lung uppermost and should be encouraged to cough. These conservative measures bring relief in the majority of cases. Suction should be used if relief does not follow quickly. If cyanosis, tachycardia or anxiety is present, no time should be lost with conservative measures but the bronchoscope should be used without delay. Carbon dioxide therapy is not universally accepted, and the question of its use is controversial. Recent work suggests that it may help to liquefy tenacious secretions. The administration of oxygen may appear necessary as a life saving measure in case of severe degrees of asphyxia, but its use might delay the clearing up of the atelectasis. Getting the patient out of bed and forcing him to walk, if it is possible, might terminate some cases of atelectasis very quickly. There has been a tendency to glorify the bronchoscope in the treatment of postoperative atelectasis. Its frequent use for this purpose is not a true cause for pride but rather a matter to cause concern. Not only great length of anesthesia but also great depth favor the development of atelectasis. The anesthetist must avoid, eliminate or combat such contributory factors as traumatic concentrations of irritating vapors, obstruction in the respiratory tract and resistance in the gas machine and in the connecting tubes, and respiratory depression from narcotics, spinal anesthesia, tribromethanol or cyclopropane. In inhalation anesthesia with very quiet breathing it seems likely that constant slight positive pressure (1 or 2 mm. of mercury) throughout all phases of the respiratory cycle may prevent gross atelectasis on the operating table. This effect is produced by the spirometer type of bag of the Connell machine and may be produced with other machines by putting a light weight on the ordinary breathing bag according to the method of Albert Miller. Some anesthetists believe that it is well to taper off high concentrations of oxygen in the respired mixture toward the end of operation, using an inert gas such as helium or nitrogen, so as to avoid leaving the alveoli filled with rapidly absorbable gases when the breathing suddenly becomes quiet after removal of the mask. Immediately after the prolonged administration of any inhalation anesthetic, suction should be used routinely in the pharynx, or, if an endotracheal tube is in place, suction should be used through this if the presence of gross amounts of secretion is suspected. Suction should also be used in the pharynx immediately before the removal and immediately after the removal of endotracheal tubes.

DR. ALFRED HABEEB, Fairfield, Ala.: I should like to ask what the causes of atelectasis are in spinal anesthesia when the patient does not go to sleep. In a summary of cases made a year ago, I found that the percentage of atelectasis does not differ very much in local or spinal anesthesia from that of general anesthesia. When atelectasis does occur, however, it is, as the authors mentioned, usually in high abdominal cases and in patients who are old and weak and who usually have bad hearts—patients with only a fair prognosis. For this reason I should like to ask if the authors do not think that carbon dioxide is usually a little heavy stimulant for this type of patient. I do not employ bronchoscopy routinely. In fact, some writers believe that mucous plug is a far fetched theory. However, I do agree that mucous plugs occur in general anesthesia. We must bear in mind that heavy traction against the diaphragm during high abdominal surgery is a big factor in producing atelectasis. My treatment in the prevention of atelectasis is to cut down as much as possible on postoperative sedation and encourage exercise and deep breathing. I have had very few cases of atelectasis. I do not think any of these patients ever die from atelectasis. The patients are usually acutely ill for a couple of days, after which they recover.

DR. LEO V. HAND, Boston: I should like to add a few words in agreement as to the causes and the importance of postoperative suction bronchoscopy as already expressed by the two previous speakers. In talking on postoperative suction bronchoscopy, there are lessons which I have learned from bitter experience which may be of value to the majority of anesthetists. My best results are obtained when the procedure is performed in the operating room. Many anesthetists have asked me "Do you do it in the room with the patient in bed?" It may be easily accomplished in the patient's room, but in the operating room one has a trained personnel and all the equipment necessary for any potential complication. As to the agent and method of anesthesia, I prefer to use cocaine as a topical anesthetic. In 1 instance, in the presence of postoperative thyroid crisis, pentothal was administered intravenously with a fatality, the only fatality. While setting up the postoperative suction bronchoscopy I employ a more conservative measure, such as the passing of a No. 20-24 urethral catheter into the trachea, frequently under direct vision. My experience of late has been that approximately 30 to 40 per cent of the patients

with this catheter method of aspiration will improve without the necessity for suction bronchoscopy. Again the question may arise as to the possible technical difficulties in the passing of the bronchoscope. My experience has been that it is much quicker and certainly easier for me to pass a bronchoscope through a laryngoscope than to attempt to pass it directly without laryngoscopy.

DR. HERBERT W. SCHMIDT, Rochester, Minn.: There are three points which I should like to emphasize: First, atelectasis is not an uncommon complication after general anesthesia. Second, postoperative bronchoscopic aspiration has a very definite advantage over the catheter method of aspiration of the tracheobronchial tree, since it is a procedure carried out under direct vision. At times, one of the larger bronchi will be found to be obstructed by a blood clot, and it will be necessary to remove this clot with forceps. If one used a catheter in a complication of this sort, it would be impossible to see what type of obstruction existed and very difficult to dislodge the foreign material. Third, atelectasis in itself may be accompanied by a very low rate of fatality, but some of the conditions that it in turn produces, such as pneumonia, abscess of the lung and empyema, will be associated with a fairly high fatality rate.

THE KENNY PRINCIPLES AND INJURIES OF THE KNEE JOINT

MAJOR VERNON L. HART
Medical Corps, Army of the United States

"Redevelop the quadriceps" is the first sentence in the chapter on Injuries of the Knee in Watson-Jones's recent textbook.[1] He also states that wasting of the quadriceps muscle is in itself a source of disability and that it occurs as a direct consequence of injury of the knee joint. An almost total reflex inhibition of the quadriceps may be observed, and the muscle is completely flaccid. It might well be paralyzed, for no flicker of active contraction seems possible. Wasting is unusually rapid and the volume of the muscle disappears far more rapidly than it can subsequently be regained. Treatment is therefore urgent. The inhibition must be overcome as soon as possible by the patient's own exercise. Massage and faradism are relatively useless, because the treatment is purely passive, it does not restore voluntary control, it encourages the patient in his apathy. It is not enough to advise the patient vaguely to practice exercise. Specific instruction is essential.

Watson-Jones also states that with quadriceps wasting the knee joint is imperfectly protected from the twists and strains of weight bearing. If muscle wasting is accompanied by rupture of ligaments, the disability is not relieved by operative construction of new ligaments or by the use of a knee cage because, if the muscle guard is lost, the ligaments stretch as soon as weight bearing is resumed and protection by a brace is inadequate and further wasting of muscles is encouraged. If the quadriceps muscle can be fully redeveloped, relaxation of ligaments and early osteoarthritis cause little or no incapacity. The joint is protected. The muscles are the first line of defense of the joint; the ligaments are the second.

The quadriceps and other muscles can be redeveloped and the morbidity resulting from injuries of bones and joints can be greatly reduced if the Kenny principles, which have only recently been accepted by the medical profession in the treatment of anterior poliomyelitis, are applied in the treatment of injuries.

These principles are simple and scientific. They are the principles of mechanical and physiologic rest and are essential in any therapeutic program that deserves the name of functional treatment. They are not new principles but old ones which have been salvaged from a disorganized field of physical therapy and safely placed in the hands of the medical profession by a sincere, intelligent and practical nurse, Miss Elizabeth Kenny of Brisbane, Australia.

Quadriceps muscle insufficiency causing knee joint instability, adhesions of various gliding mechanisms including bursae, tendon sheaths, joints, intermuscular and fascial planes causing pain and loss of joint and muscle function, muscle spasm, and contractures of tendons, muscles, fasciae and ligaments causing deformity are familiar problems to all physicians who examine and treat traumatic conditions. They can be prevented by a clear understanding and proper application of the Kenny principles.

I was fortunate to have attended lectures, demonstrations and clinics which Miss Kenny gave at the University Hospital and General Hospital in Minneapolis from the fall of 1940 until the spring of 1942, when I entered the service of the U. S. Army, where I have had an unusual opportunity to apply the Kenny principles in the treatment of bone and joint injuries. I had practiced the principles of mechanical and physiologic rest and had taught that the integrity of the neuromuscular, circulatory and articular systems could be maintained in the presence of injury to bone, joint and soft tissues if mechanical and physiologic principles were adequately applied. I give credit to Miss Kenny for bringing order and respect to these principles and applying them in a functional system of treatment. She has given a great service to the bastard specialty of physical therapy, which many physicians have refused but must recognize as a legitimate and equal specialty of the medical profession.

I have selected the various internal derangement injuries of the knee joint for consideration in this paper; however, any bone or joint injury could be presented to demonstrate the importance of the application of the Kenny principles. The program of treatment may also demand proper use of surgical principles of reduction and retention of a fracture, suture of a severed tendon, excision or suture of a fractured patella, excision of a torn and displaced semilunar cartilage, reduction of a dislocation, repair of a severed nerve, care of a burn, treatment of infection of a bone or joint, and aspiration of a hemarthrosis. The surgical principles are essential, but assiduous attention to the mechanical and physiologic or Kenny principles may determine the success or failure of treatment.

Miss Kenny has recognized a vicious clinical cycle in the acute stage of anterior poliomyelitis which frequently persists and causes deformity and disability. The sequence of pathologic events which she so keenly observed is muscle spasm, mental alienation of muscle and incoordination of muscle function. She has elaborated a system of treatment which relieves this triad and restores the functions of neuromuscular, circulatory

Released for publication by the War Department Manuscript Board, which assumes no responsibility, other than censorship, for the contents of this article.

1. Watson-Jones, Reginald: Fractures and Other Bone and Joint Injuries, ed. 2, Baltimore, William Wood & Co., 1941.

and articular units. The same triad of symptoms can be demonstrated following injuries and especially after internal derangements of the knee joint.

If any physician still doubts the actual existence of this syndrome or wishes to see each one of the three cardinal symptoms by clinical demonstration, I suggest the presentation of a patient with an acute internal derangement of the knee joint.

Following an injury to a knee joint one can demonstrate muscle spasm, mental alienation of muscle and incoordination of muscle function. These are the three cardinal attributes in the stages of poliomyelitis which Miss Kenny recognizes and treats, and she has demonstrated them to the satisfaction of the medical profession. If Sister Kenny was directed to examine and treat soldiers with internal derangements of the knee joint without the assistance of physicians, she would observe these three cardinal clinical findings as she did in her patients with poliomyelitis. She would treat what she found and the patients would recover with functional extremities because the integrity of the neuromuscular, vascular and gliding units would be preserved; deformity and disability would be prevented. Paralysis may be present in the patient with poliomyelitis and a torn semilunar cartilage may be present in the patient with a knee joint injury, but the syndrome of muscle spasm, mental alienation of muscle and incoordination of muscle function are the clinical features which exist in each. These three symptoms can be demonstrated, and they must be treated and relieved because they are the pathologic basis for deformity and disability. The torn cartilage or the ruptured ligaments may require subsequent surgical treatment, but the immediate therapeutic consideration is not surgical. A fractured patella or tibia may demand immediate surgical repair before the Kenny principles can be inaugurated. A fractured femur treated by skeletal traction is being neglected if mental alienation of muscle and incoordination of muscle function are not corrected during the weeks of skeletal traction. If the knee joint capsule is unduly tense because of hemarthrosis, aspiration may be required before the Kenny treatment can be efficacious.

Fig. 1.—Relief of spasm is the first consideration in treatment immediately following injury to the knee joint. This is accomplished with application of hot fomentations over the entire area of involved muscles and tendons. A large folded pillow is placed under the knee with patella and toes facing directly forward. The size of the pillow is gradually reduced as the muscle spasm and flexion deformity diminish.

Muscle spasm is present in the flexor muscles of the knee immediately following injury. The hamstring and gastrocnemius muscles and tendons are shortened because of the pain reflex spasm, and a flexion deformity of the knee joint is the result. A muscle in spasm is unable to relax and allow itself to lengthen. Any attempt actively or passively to lengthen the muscles in contraction only aggravates the muscle spasm and increases the knee flexion deformity. The temporary contractures resulting from pain stimuli may become permanent contractures with a fixed flexion deformity of the knee if the condition remains untreated.

Relief of spasm is the first consideration in the treatment of the acute stage of internal derangement of the knee. Treatment is begun immediately. The patient

Fig. 2.—Muscle spasm, pain and flexion deformity have been relieved. Mental alienation of quadriceps muscle function is now demonstrable. Quadriceps function is restored by teaching the patient awareness of the muscle and of its normal action on the joint. Specific instruction is essential. A small infant pillow is placed under the knee to support the normal popliteal concavity. The upright board placed at the foot of the bed serves to stimulate the normal standing and postural reflexes.

is placed in bed on a firm mattress in the normal position of rest and the flexed knee supported by a fracture pillow, rolled towel or blanket (fig. 1). An upright board placed at the foot of the bed serves to stimulate the normal standing and postural reflexes. The foot is not placed against the foot board during the period of active and painful muscle spasm. The Kenny treatment employs the use of moist heat. Wool flannel packs are immersed in boiling water, wrung twice through a tight wringer at the bedside and quickly applied over the entire area of involved muscles and tendons. The moist pack is covered with oiled silk and then with dry flannel. The pack is changed about every two hours and discontinued during the night. Burns do not occur if the packs are wrung quite dry. The relief of pain, muscle spasm and deformity is frequently dramatic. Aspiration of knee joint hemarthrosis is rarely necessary. A plaster of paris splint is not applied to the injured extremity.

The flexion deformity is the result of muscle spasm. Manipulation to reduce a suspected displaced semilunar cartilage is contraindicated. On numerous occasions I have observed at operation a torn cartilage displaced between the femoral condyles which had not prevented complete and active extension of the knee joint. Pain, muscle spasm and deformtiy are usually relieved after two to four days of treatment with hot packs and knee support. From the onset the patient is encouraged to keep the patella and toes facing the ceiling. In this position gravity seems to assist in the gradual correction of the flexion deformity of the knee as the muscle spasm subsides and the size of the pillow used for support is gradually reduced (fig. 2).

Mental alienation can now be demonstrated. The quadriceps extensor femoris is the victim. As Pohl [2]

2. Pohl, J. F.: The Kenny Treatment of Anterior Poliomyelitis (Infantile Paralysis), J. A. M. A. **118**: 1428-1433 (April 25) 1942. Hart, V. L.: Physiological Rest and the Preservation of Locomotion, Surg., Gynec. & Obst. **56**: 687-691 (March) 1933. Hart, V. L.: Prevention of Deformity and Disability, Arch. Phys. Therapy **17**: 71-82 (Feb.) 1936.

stated, spasm, besides the actual damage to the muscle tissue, has a further disturbing effect on the neuromuscular system. It must be kept in mind that motion of a joint in any given plane is a matter of control by opposing muscles. A muscle in spasm is a muscle attempting to contract. Spasm in the flexor will result in relaxation of the extensor of a joint. Furthermore, the extensor will refuse to pull against the flexor which is painful. The result is that the extensor ceases function, although it may be quite normal. Such a muscle appears to be paralyzed, whereas in reality it is only nonfunctioning. It has become divorced from the motor pattern

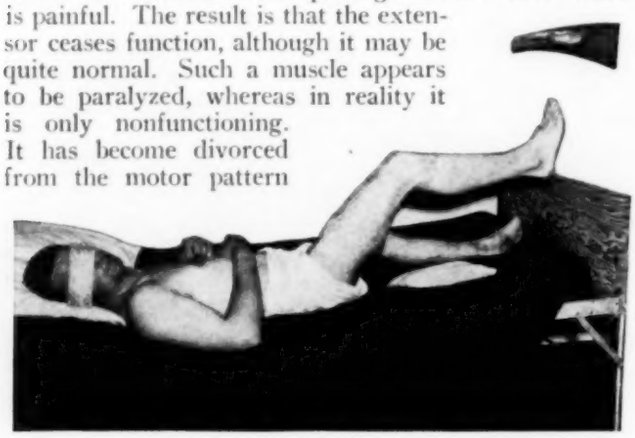

Fig. 3.—The patient is not ready to become ambulatory. Muscle spasm, pain and flexion deformity have been completely relieved, but quadriceps muscle function has not been restored because the patient cannot extend actively and completely the knee against the resistance of gravity.

or alienated from the voluntary center regulating motion. It must be restored and it can be made to function by teaching the patient awareness of the muscle and of its normal action on the joint. This is first done by the process of stimulation, that is of exciting the proprioceptive nerve ending in the muscle and tendon which normally inform the central nervous system of the position and motion of the joint. Alternately lengthening and shortening a muscle within its normal range of contraction by moving the joint in a small arc will serve to do this, care being taken, however, not to stretch or stimulate the opposing muscle which is in spasm. This procedure may be repeated daily until such time as the spasm has been relieved in the opposing muscle by the use of the hot foments. The patient is then gradually retrained in the use of the alienated muscle, first being taught the position and action of the muscle but being allowed no weight bearing joint motion until proper function of the quadriceps muscle has been restored (fig. 3). After normal rhythmic action of flexor and extensor muscles against the resistance of gravity is imprinted on the motor center, the patient is allowed to become ambulatory (fig. 4).

Examination of the quadriceps muscle frequently reveals an almost total reflex inhibition. Not even a flicker of active contraction seems possible. I have seen this state of apparent paralysis of the quadriceps weeks and months after the original injury in patients who were never taught the program of muscle reeducation. Quadriceps atrophy and loss of active and complete knee joint extension may be associated with fixed contractures of the knee flexors and muscle incoordination. The normal function of the quadriceps which is active extension and stabilization of the extended knee is partially replaced by the force of gravity. The patient limps and guards the knee by using a cane or with his hand pressed against the front of the thigh to prevent the knee from sudden collapse while weight bearing. He may walk with the extremity externally rotated so that the internal ligament of the knee checks the forward thrust at the knee level.

I teach the patient awareness by demonstrations of the anatomy and functions of his normal quadriceps first. The patient's interest and enthusiasm enhance restoration of the affected muscle, and after a few days of treatment by awareness of the affected muscle the muscle is no longer alienated from the motor center. Smooth motion and coordination are restored. The motor or neuromuscular physiologic unit is reestablished and bodily mechanics are preserved (fig. 4).

Patients with the common types of internal derangement are usually ambulatory after a week or ten days, when they have regained normal voluntary control of the quadriceps motor mechanism (figs. 3 and 4). For several days they walk with the aid of a chair, cane or crutch and after two or three weeks return to duty. I have been impressed with the unusually high percentage of normal knees following this system of treatment and the extremely small number of patients with recurrence of disability. This program of treatment diminishes the original period of disability, eliminates the use of all plaster splints and other forms of mechanical appliances, reduces recurrent disability and greatly reduces the necessity of surgical correction of knee joint disability as compared with other methods of treatment that I have used.

My associates and nurses and I are conscious of the Kenny syndrome. There may be a torn cartilage or a ruptured ligament in our patients as there may be an actual paralysis in some of Sister Kenny's patients, but they are made comfortable and their disability is relieved by a clear understanding of the Kenny syndrome and proper application of the Kenny system of treatment.

A chronic knee joint disability may or may not demand surgical treatment. Frequently the disability is relieved by the Kenny program, which corrects muscle spasm, contracture, mental alienation and incoordination. The same program not infrequently restores normal knee joint function in knees that have not been relieved of disability by surgical treatment.

Reginald Watson-Jones, the brilliant English surgeon, has made a plea to the medical profession to "redevelop the quadriceps"

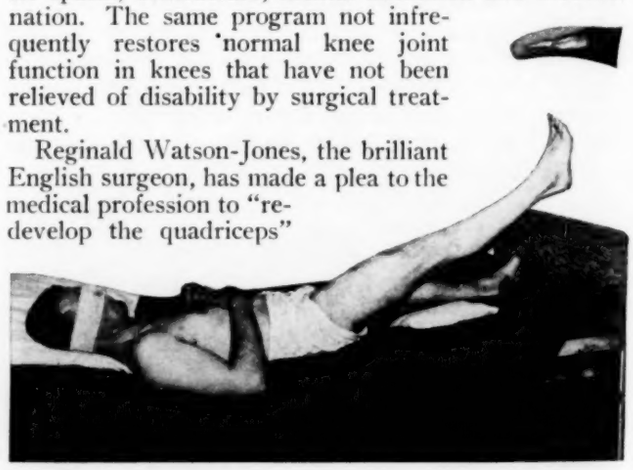

Fig. 4.—The patient is now ready to become ambulatory. Muscle spasm, pain, flexion deformity and mental alienation of quadriceps muscle function have been relieved. Normal quadriceps function is demonstrated by complete extension of the knee against the resistance of gravity. Incoordination of muscle function is prevented with normal rhythmic action of both extensor and flexor muscle groups.

after knee joint injuries and restore the neuromuscular unit and prevent unnecessary disability. Sister Kenny has given to the medical profession a scientific explanation of quadriceps insufficiency and a system of treatment to correct or prevent it by relieving muscle spasm, alienation of muscle and incoordination of muscle function.

Station Hospital.

INTESTINAL MOTILITY AND POSTOPERATIVE DISTENTION

EXPERIMENTAL AND CLINICAL STUDIES

CHARLES B. PUESTOW, M.D.
CHICAGO

Postoperative distention and gas pains frequently are dreaded more by patients advised to undergo surgical therapy than are the dangers of the operation itself. Many factors are known to contribute to these distressing complications. Intestinal obstruction may result from a variety of causes and produce pain and distention. Peritonitis with its associated inflammatory reaction of the intestine interferes with peristalsis, and distention follows. Surgical procedures on the bowel are followed by diminished motility of the operated segments often causing temporary partial obstruction. Rough handling of the bowel during an operation may produce the same results. However, in the majority of instances, distention and gas pains are not the result of a demonstrable organic complication but are thought to result from a "functional" disturbance of intestinal motility.

Experimental and clinical studies on the motor mechanism of the intestine have produced a great volume of scientific literature and many important observations. Much desired information, however, is still unknown. The normal habitat of the bowel within the peritoneal cavity and the disturbances in its physiology which result from exposing, transplanting or manipulating it to facilitate study make accurate observations difficult. Indirect methods of study often produce abnormal responses or may be difficult to interpret.

An ideal preparation for the study of intestinal motility would be one which would permit long and varied observations on the entire tract without altering the responses except as would normally occur under the varying physiologic and pharmacologic conditions of the experiment. It also should permit the satisfactory recording of these responses. The difficulty of securing such a preparation of organs which are situated normally within the body, and whose action is so easily altered by changes of habitat, psychic and nervous influences, anesthesia, operative trauma, alterations in circulation and various types of extraneous stimuli, is apparent.

Animal experimentation has yielded accurate information relative to bowel activities in various species. Many of these may be applied to man; others, because of differences in structure and function, may not. A review of studies which laid a groundwork for our present knowledge will not be attempted here. However, physicians owe much to the careful studies made on isolated strips of intestinal muscle, various isolated or transplanted segments of bowel, ingenious operations and mechanical devices to facilitate study and the utilization of the rare opportunities that sometimes afford unusual preparations for study. Many names are outstanding in this field of research, but to mention a few workers would be to neglect others who have contributed valuable information. We have conducted many and varied experiments on the dog. Detailed discussion of them will not be included in this paper. A brief correlation of them with human studies will be made after the discussion of our clinical experiments.

Accurate observations on motility of the bowel in man have been more difficult to obtain than those in animals because less suitable preparations have been available for study. The open abdomen of surgical patients gives a clear view of the intestine, but the activity probably is altered by anesthesia, exposure to air, the influence of disease and the preoperative administration of drugs. A few investigations have been made by the introduction of balloons through the esophagus and anus and through fistulas in both the large and the small bowel. Hernial sacs containing bowel and thin abdominal scars have permitted direct observations of peristaltic activity, but the overlying skin or scar tissue usually does not allow a clear view of the underlying bowel or enable the observer to identify the portion of intestine being studied or orient it as to the direction of its activity or its relationship to associated segments. Many roentgen studies have been made by the use of opaque meals. In the colon such studies can give considerable information because the various portions of the large bowel can be identified easily and the slow nature of most muscular activity permits prolonged study. In the small bowel, however, orientation is much more difficult because of the length of the intestine, its multiple intermingled coils and the rapidity of its movements.

An unusual preparation permitting the study of intestinal motility in both the large and the small bowel of a patient was presented to me as the result of a number of surgical procedures and complications. The history of this patient is here given.

REPORT OF CASE

Miss L. B., aged 31, observed in 1928 a sudden severe hemorrhage from the urinary tract. She was hospitalized and under medical supervision improved rapidly and remained symptom free for more than three years. In 1931 she again experienced attacks of hematuria but with associated severe back pain at irregular intervals for about two years. A diagnosis of renal tuberculosis was made, and nephrectomy on the right side was performed June 6, 1933 in another city. The diagnosis was not confirmed by microscopic studies of the kidney. After the operation pus and urine drained persistently from the incision. She was admitted to the Illinois Research and Educational Hospital Sept. 19, 1933, presenting a nephrectomy scar in the right lumbar region, unhealed in the anterior one third and discharging a brown purulent material. Although some urine drained through the fistula, she was voiding through the urethra. October 16 the fistulous tract was resected, but complete healing failed to occur and a large amount of urine drained through the wound. This was urine secreted by the left kidney, which passed into the bladder and out through the patent right ureter. Jan. 29, 1934, a suprapubic cystotomy was performed. The right ureter was isolated and ligated at the bladder, and the vesical mucosa was oversewn after excision of the orifice of the fistula. Following this, urinary drainage through the sinus immediately ceased and the suprapubic wound healed. The patient was dismissed from the hospital on March 5 with the infected sinus healing and no leakage of urine.

May 26 she was readmitted to the hospital with a total fecal and urinary fistula at the site of the sinus in the anterior end of the original nephrectomy wound. The incision had been extended well around anteriorly and the fistula opened above and slightly anterior to the anterior superior spine of the ileum. My associates and I are of the opinion that perforation of the colon resulted from trauma induced by the patient and that the infection associated with the fecal fistula caused a reopening

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A 16 mm. motion picture film showing motility of the large and small intestine and the action of drugs on it may be secured from the author.

Read before the Section on Surgery, General and Abdominal, at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1942.

of the bladder at the point at which the right ureter had formerly entered. Roentgen examination revealed that the fistula led into the midascending colon. The patient was then transferred to my service for closure of the fecal fistula.

Because of the large opening into the right colon, the extensive infection of the right flank and the possibility of a tuberculous infection existing (although this could never be demonstrated), it was decided to short circuit the fecal current from the right colon and later do a colectomy on the right side. June 21 a side to side anastomosis was made between the terminal ileum and the midtransverse colon. Two weeks later, evidently from self-induced trauma, the colon was separated from the abdominal wall at the site of the ascending colostomy, and several loops of small intestine eviscerated. These were replaced and the colostomy edge was sutured to the margin of the skin. Healing occurred without incident.

Some time later the abdomen was opened again through a right rectus incision for the purpose of removing the right colon. However, because of extensive infection and induration in the right side of the abdomen, it was decided only to isolate completely the right colon from the remainder of the intestinal tract at this time. This was accomplished by dividing the ileum and transverse colon to the right of the previously made ileocolostomy and closing all four bowel ends. Recovery was satisfactory and in a few days all urinary drainage from the fistula ceased. The large opening into the ascending colon drained only a little mucus. The patient was dismissed and advised to return after several months for removal of the segment of right colon. On her return she presented such an interesting preparation for the study of intestinal motility that further surgery was delayed for more than two years to enable the accompanying observations to be made. During the greater part of this time the patient remained in the hospital and willingly cooperated. She was in good health throughout this period.

On Nov. 23, 1937 I removed the isolated right colon with comparative ease by reopening the anterior portion of the original nephrectomy wound, freeing the colostomy edge and then dividing the right mesocolon. No other pathologic condition was noted, and the wound was closed in layers. Recovery from this operation has been satisfactory. The specimen consisted of the appendix, cecum and entire ascending colon. The colostomy opening was 15 cm. distal to the junction of the appendix and cecum.

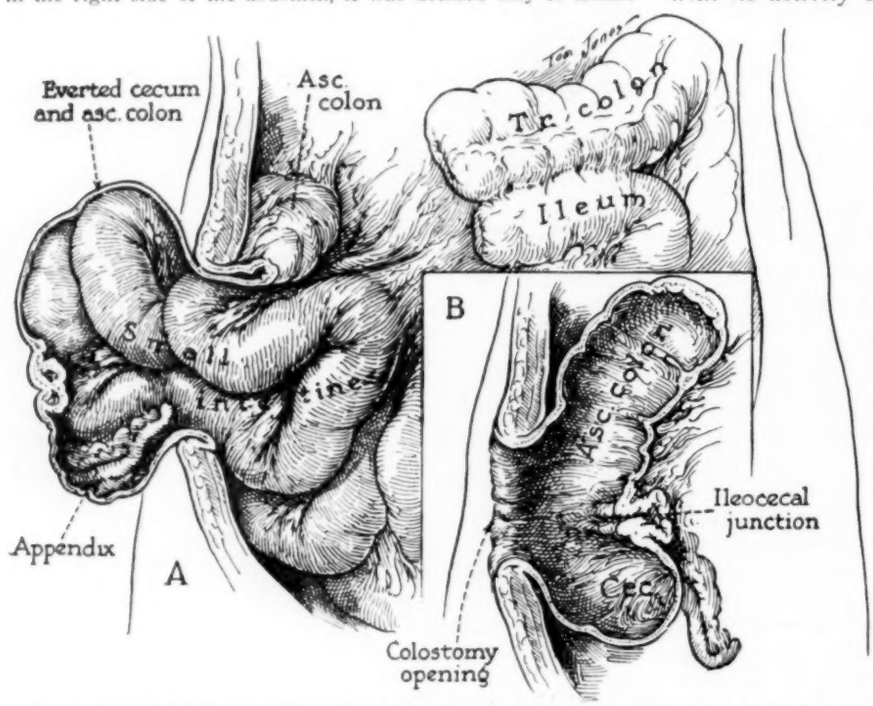

Fig. 1.—*A*, diagram of anatomic relationship when hernial sac protruded; *B*, position of right colon when replaced in abdominal cavity.

As a result of the operations on this patient, her cecum and ascending colon were isolated from the remainder of the gastrointestinal tract, whose continuity had been reestablished by an anastomosis of the terminal ileum to the transverse colon (fig. 1). A large defect existed in the right abdominal wall and connected directly with a large colostomy of the midascending colon. A long right mesocolon permitted the entire cecum and most of the ascending colon to evaginate through the colostomy when the patient strained (figs. 2, 3 and 4). Thus a large hernial sac was formed consisting of the right colon with its mucosa on the outside and the peritoneal covering or serosa of the colon forming the lining of the sac. Into this sac several loops of small intestine protruded. The large diameter of the colostomy which formed the neck of the hernial sac did not constrict the small intestine or interfere with its activity or blood supply. The single layer of colon wall that covered the small intestine was sufficiently thin to permit accurate observation of the motility and tonus of the underlying small bowel. Roentgen studies with barium by mouth and by enema revealed the location of the small intestine which entered the hernial sac to be the lower jejunum and upper ileum. Coincident with studies on the small bowel, motility of the right colon also could be observed. At the conclusion of an observation the hernia was reduced by having the patient turn on her left side, at which time the sac and its contents readily returned into the abdomen, where they could be maintained by a loose abdominal belt.

MOVEMENTS OF THE SMALL INTESTINE

The loops of small intestine observed in this patient, when checked by roentgen examination and subsequently at operation, appeared to be the lower part of the jejunum and the upper part of the ileum. Several loops were visible in most studies. As much as 2 feet of bowel sometimes could be watched. The distal and proximal portions of each loop could be determined only by the direction of visible motion. Several types of activity were seen. Definite waves of rhythmic contraction coursing in one direction and occurring at the rate of eight to twelve a minute were commonly present. An area of dilatation usually was associated with one of constriction. However, sometimes the constriction seemed to precede the dilatation and at other times it appeared to follow it. The contraction sometimes would pass the length of the exposed segment but at other times would fade out after going a few centimeters. The rate was quite constant when the bowel was active, and an increase in motility was manifested chiefly by an increase in the regularity and strength of contractions rather than by an acceleration in rate. As motility increased the contractions appeared to be more progressive, giving the impression of a greater propulsive power. A second common type of motion usually associated with the rhythmic waves was a churning or to and fro activity

of fairly short segments of bowel. Definite contraction rings did not appear in this motion, and frequently only a small portion of the circumference of the bowel seemed involved. Neither segmentation nor reverse peristalsis was observed. There appeared to exist a definite relationship between motility and tonus. When the bowel was inactive its tonus diminished, with a resulting enlargement in circumference. As motility increased the tonus became greater.

No relationship could be observed between feeding and motility of the small bowel. On some days the bowel seemed almost totally relaxed and inactive, on others it was vigorously active, although the time of day and meal relationship were the same. Feeding during an observation had no noticeable effect on activity.

MOVEMENTS OF THE COLON

Our observations on this patient were confined to the cecum and proximal half of the ascending colon. The colostomy opening, which was 15 cm. from the base of the appendix, permitted the complete eversion of colon proximal to it and from 10 to 15 cm. of colon

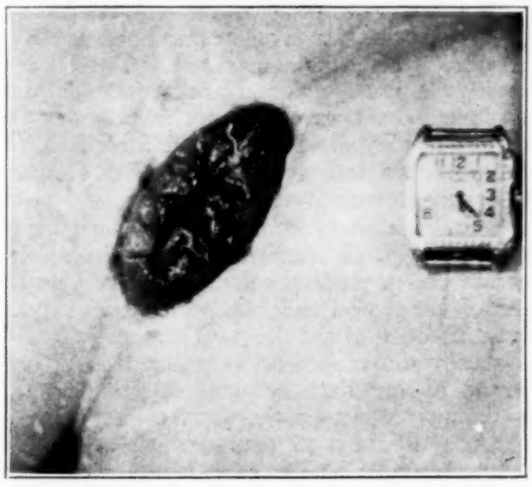

Fig. 2.—Colostomy opening with right colon in abdominal cavity.

distal to it. The entire segment was turned inside out, with the mucosa forming the outer layer. This position, of course, was abnormal but did not appear to alter the muscular activity. Although intestinal contents did not enter the right colon, the exposed segment could be filled with loops of small bowel and distended to any desired degree by increasing intra-abdominal tension. In this manner the mechanical factor of distention could be simulated. The bowel remained a healthy color, continued to secrete mucus and responded similarly in frequent studies throughout two years of observation.

Inactivity was the most characteristic feature of this segment of proximal colon. For hours at a time no appreciable amount of motility was seen. Small superficial areas of contraction were more or less constant. These could conceivably have a churning action but could not cause progress of bowel contents. At times the segment hung limp with almost a complete loss of tone. During these periods the small churning movements were weak or absent. At other times the tonus was improved and the ripple-like contractions were stronger and more frequent. With a still greater increase in tone the contractions became more diffuse and simulated to some degree pendulum movements. However, definite contraction rings did not form. Occasionally, during hours of observation, one or more strong generalized contractions were seen. These were very slow but powerful contractions. In most instances they began in the cecum, which contracted as a unit.

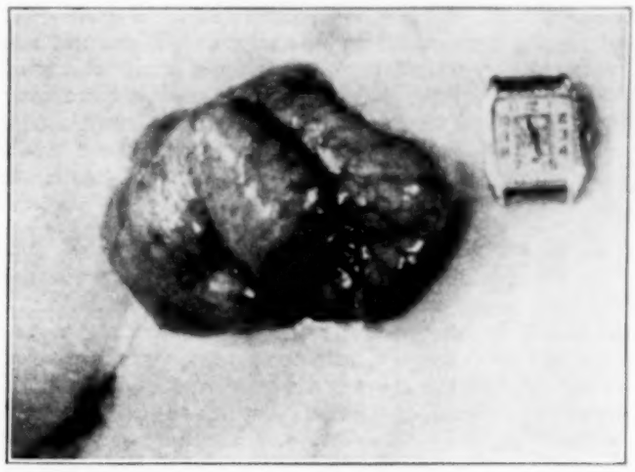

Fig. 3.—Hernial sac protruding showing loops of small intestine covered by right colon.

The wave of contraction then would travel very slowly up the ascending colon, the cecum usually remaining firmly contracted. The strength of contractions was sufficiently great to replace completely into the abdomen the contained loops of small intestine. The time required from the onset of the wave in the cecum until the entire exposed segment was firmly contracted was usually one to three minutes. The bowel often remained in a tonic state of contraction for periods of time up to several minutes thereafter. Relaxation sometimes occurred gradually and at other times suddenly, with the bowel becoming very atonic. Occasionally two or three similar contractions would succeed one another in a brief lapse of time. It was rare to see a single contraction or a series of contractions of this nature more than once during any one observation period.

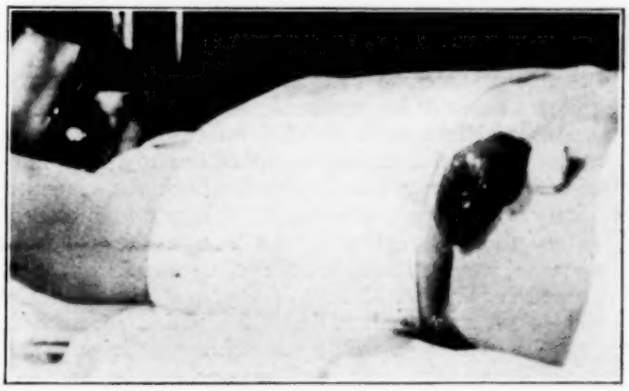

Fig. 4.—Appearance of patient with bowel exposed.

Occasionally a contraction of the colon would begin as a constricting ring at the junction of the cecum and ascending colon. When this occurred, the cecum sometimes contracted as a unit shortly thereafter, but at other times it would remain distended, the contraction ring preventing it from emptying itself of its contents. The wave would progress up the ascending colon in a manner similar to that seen when contractions originated in the cecum. No other form of peristalsis and no reverse peristalsis were seen in the right colon.

The patient was observed after fasts of varying duration and was fed during observations to note the influence of feeding on the activity of the proximal colon. Occasionally soon after eating a slow progressive mass contraction would occur, but this was so infrequent as to lead us to conclude that a gastrocolic reflex was uncommon in this patient. There did not appear to be a definite relationship of contractions of the colon to fasting, feeding or time of day. Pinching the mucosa frequently would elicit strong contractions, but distention of the segment by forcing more small intestine into the colon did not initiate this response.

RELATIONSHIP OF SMALL AND LARGE BOWEL MOTILITY

A very definite relationship was noted between the motility of the small intestine and that of the right colon. When the small bowel was contracting vigorously the colon showed little or no activity and appeared atonic. When the colon became active the visible small intestine showed a definite diminution in tone and became larger in diameter, and its muscular activity became definitely diminished and at times almost ceased. It was not uncommon for both the small intestine and the right colon simultaneously to show little or no motility, but it was extremely rare for the two to be vigorously active at the same time. Since the duodenum, upper part of the jejunum and terminal portion of the ileum were not visible, their activity was not ascertained, but it was very obvious that there was an antagonistic activity between the midportion of the small intestine and the right colon. When the former was active the latter was definitely quiet and, conversely, when the right colon was contracting there was an inhibition of both motility and tonus of the small bowel.

ACTION OF DRUGS ON INTESTINAL MOTILITY

Since the small and large intestine could be observed simultaneously in this patient, she provided an excellent opportunity for the study of the influence of various drugs on the motor activity of the bowel. A number of drugs commonly used on surgical patients were employed.

Morphine sulfate was administered hypodermically in doses of ⅙ grain (0.01 Gm.). Muscular changes in the bowel became evident in from five to fifteen minutes. The small intestine showed a gradual increase in tonus and in motility. This increase was progressive and reached a maximum in fifteen to thirty minutes after the drug was injected. Both the churning motion and the progressive rhythmic waves increased in strength and regularity. Although the rhythmic peristaltic waves showed little change in rate, they occurred regularly with few, if any, rest periods. The small bowel appeared to have a decided increase in propulsive power as well as in mixing activity. This increase in activity continued for one or two hours or longer and gradually subsided to normal. A secondary depression in motility was not noted although observations were continued for several hours. In a number of experiments a second administration of morphine was given two hours after the first. Occasionally a further increase in motility was noted if maximum contractions did not follow the first injection. The duration of stimulation was prolonged in most instances. Again secondary depression was not noted. Of all the drugs employed, morphine had the most constant and greatest stimulating influence on the small bowel. Injections of morphine were always followed by a relaxation and a decided diminution or complete cessation of motility of the right colon. Mass contractions were not seen. What activity occurred was of the small churning type of local waves, weak and nonpropulsive. The degree of tonus and motility of the right colon was inversely proportional to that seen in the small intestine.

Physostigmine salicylate was administered in doses of 1/50 grain (1.3 mg.) both subcutaneously and intramuscularly. An increase in tonus and motility of the small intestine was noted, but this response was mild and inconstant. The right colon was not greatly altered but contractions were not seen following the use of this drug and relaxation was frequently observed. Almost invariably nausea and vomiting were induced, and circulatory disturbances were manifested.

Prostigmine methylsulfate in doses of 1 cc. of 1:2,000 and of 1:4,000 solution was used on many occasions. The results were uniform and constant. In from five to twenty minutes a definite increase in tonus and motility of the small intestine was noted. Contractions were both of the local churning and of the progressive peristaltic type. The latter were regular in rhythm and of maximum rate. Local spasms were not seen, and peristalsis always appeared to be of a progressive propulsive character. The patient was not conscious of any discomfort, cramping or intestinal activity. The stimulation of motility was nearly as great as that following the use of morphine and was greater than that produced by any other drug employed. It continued for one-half hour to several hours and gradually returned to normal. Secondary depression was not noted.

In contrast to its stimulating effect on the small intestine, prostigmine methylsulfate definitely inhibited the cecum and ascending colon. Contractions of this portion of the bowel did not occur for many hours after the injection of the drug. The tonus of the right colon greatly diminished and remained so throughout the period of time that the small intestine was active. This inhibitory effect on the right colon corresponded to that produced by all drugs which stimulated the small bowel.

Both acetylcholine and mecholyl chloride were given to our patient subcutaneously. Occasionally a slight stimulation of the motility and an increased tonus of the small intestine were noted. Frequently no effect was seen. The colon was never stimulated by these drugs.

Solution of posterior pituitary in doses of 1 and 2 cc. and pitressin in doses of 10 and 20 pressor units were administered subcutaneously. The character of the response to the two drugs was similar, varying only in degree and duration. The time interval between the injection and the onset of visible effects was from three to thirty minutes, most frequently in ten to twenty minutes. The maximum effects were noted ten to twenty minutes later. Results were so constant and uniform as to leave no doubt in the minds of the observers as to the influence of these drugs. When the small intestine was quiet no change occurred in its motility following the administration of solution of posterior pituitary. Under these circumstances occasional diminution in tonus was the only noticeable effect. When the small bowel showed visible churning and peristaltic activity, the administration of solution of posterior pituitary or pitressin was followed by an inhibition or cessation of motility and a diminution in tonus, with a resultant dilatation of the bowel. These results occurred with the smaller dose of the drugs as well as with the larger. Pitressin produced a greater

degree of inhibition than did solution of posterior pituitary. This inhibitory influence usually persisted for one or two hours, after which the small bowel would return to its former state of activity. There was no definite secondary stimulation noted.

The reactions of the cecum and ascending colon were very different from those of the small bowel. In five to twenty-five minutes after the injection of solution of posterior pituitary or pitressin, strong contractions of the colon almost invariably set in. During most observations these began by a gradual contraction of the entire cecum as a unit. There appeared to be a definite functional line of demarcation between the cecum and the ascending colon located at about the level of the ileocecal junction. Following the contraction of the cecum a slow, strong, progressive contraction spread up the ascending colon, often requiring several minutes to involve all of the exposed bowel. Sometimes the cecum would begin to relax before the most distal portion of the ascending colon was completely contracted. At other times the entire segment remained in a state of tonic contraction for several minutes and then suddenly and completely relaxed as a unit. On rare occasions the contraction began at the ileocecal junction, forming a definite constricting band. Sometimes when this occurred contraction of the cecum followed; at other times, although the cecum appeared to be trying to contract, the constricting band prevented it from emptying itself of its contents. When the constricting band at the ileocecal junction occurred, the contraction slowly progressed up the ascending colon. Sometimes, following a strong progressive contraction, the bowel remained totally relaxed for a few minutes, after which a second similar contraction would occur. At other times there was a persistent increase in tonus and an increase in the churning type of muscular activity. When this occurred peristaltic contractions often began, sometimes strongly and at other times weakly, sometimes going on to a complete contraction and at other times subsiding after only partially contracting the bowel. The duration of this increased activity was from a few minutes to an hour or longer. Usually only a few of the powerful and complete contractions occurred. The reaction of the right colon to pitressin was far more constant and pronounced than to surgical solution of posterior pituitary. Ten pressor units of pitressin produced stronger contractions than did 2 cc. of solution of posterior pituitary. The opposite effect of these drugs on the large and small bowel was very apparent.

Atropine sulfate was administered to this patient subcutaneously in doses of $\frac{1}{150}$ grain (0.4 mg.). Within a few to twenty minutes there was a definite decrease in tonus of the small bowel and some inhibition of motility. Both the peristaltic type of contractions and the local churning movements continued but were less frequent and forceful. The inhibiting effect on the small bowel was not as pronounced as was that seen following the use of solution of posterior pituitary or pitressin. The effect of atropine on the right colon was less noticeable. Frequently there seemed to be a definite diminution of tonus; at other times there was little apparent change. The small churning contractions were not entirely abolished. Occasionally a strong peristaltic contraction of the cecum and ascending colon was seen. Although atropine appeared to have a slightly inhibitory influence on the musculature of the right colon, it was not constant and was less pronounced than was that noted in the small bowel.

When atropine was combined with morphine there was little change in the tonus or motility of the intestine. To correspond with the doses frequently used on surgical patients, morphine sulfate $\frac{1}{6}$ grain (0.01 Gm.) and atropine sulfate $\frac{1}{150}$ grain (0.4 mg.) were given subcutaneously. Occasionally a slight stimulation of the small intestine with a corresponding inhibition of the right colon was noted. This was never as severe as when morphine alone was used. At other times no stimulation was noted. Definite inhibition of the small bowel was not noted following this combination of drugs.

In summary, morphine sulfate, prostigmine methylsulfate and, to a lesser degree, physostigmine and the choline derivatives produced a definite increase in tonus and motility of the small intestine and had an inhibiting influence on the motility of the right colon. Acting in a totally contrary manner, solution of posterior pituitary and pitressin inhibited the muscular action of the small bowel but produced powerful contractions of the right colon.

STUDIES ON OTHER HUMAN SUBJECTS

In an effort to determine whether the reactions recorded were peculiar to this patient or are normal human responses, in an attempt to locate the area of bowel in which reactions change from stimulation to inhibition and the reverse and with the purpose of observing whether the remainder of the colon reacts as does the right colon, studies were conducted on 13 other patients. Three of these had portions of ileum exposed to direct vision, 2 having segments of terminal ileum exteriorized at the time of resection of the right colon for carcinoma and the third having a segment several feet proximal to the ileocecal value exteriorized during an operation for intestinal obstruction. The other 10 patients all had had resections of the colon for carcinoma. At operation an effort was made to exteriorize long segments of adjacent colon to permit direct observations. Four segments of transverse colon and six segments of the sigmoid were exteriorized in this manner. After the patients had recovered from the effects of operative trauma and all inflammatory reaction had subsided, repeated observations of the motility of the exposed segments and the influence of drugs on them were made by Mr. James V. Carris.

TERMINAL ILEUM

In all experiments the subcutaneous administration of morphine sulfate in doses of $\frac{1}{6}$ or $\frac{1}{4}$ grain (0.01 or 0.016 Gm.) was followed by pronounced increase in tonus and motility of the exposed ileum lasting two or more hours. An increase in the passage of flatus and feces indicated that the small bowel proximal to the exposed segment also was stimulated. Prostigmine methylsulfate likewise produced a decided increase in the motility and tonus of the terminal ileum in all observations. The effects of pitressin on the terminal ileum were not constant. In most observations depression of both tonus and motility followed its use, but in a few instances increased activity was noted. However, all patients reported fewer evacuations from the ileostomies following the administration of pitressin, suggesting a depression of the small bowel proximal to the opening.

COLON

The exposed segments of transverse and sigmoid colon responded in an identical manner to the drugs employed. When the colon was visibly active and contracted, morphine caused a depression of both motility and tonus. Strong contractions never were seen after

the use of this drug. When the colon was relaxed and inactive no change was noted after the injection of morphine. Prostigmine methylsulfate likewise was found to produce a definite diminution of both motility and tonus of the colon. Atropine also diminished colon contractions and tonus. Contrarily, pitressin produced a decided increase in the tonus and motility of all exposed segments of the colon. Pitressin in oil produced a similar effect on the colon. The onset of stimulation was delayed longer, but its duration was considerably increased. Repeated daily injections of this drug had a definite cumulative effect on motility of the colon.

The observations on these additional patients substantiate to a great degree the conclusions reached in our studies on the patient mentioned earlier. Those drugs, especially morphine and prostigmine methylsulfate, which stimulate motility of the small bowel, have an inhibiting effect on the colon. Pitressin is a powerful stimulant to the entire colon from the cecum to the sigmoid but diminishes motor activity of the small bowel. The transverse and sigmoid colon responds to all stimuli in a manner similar to the cecum and ascending colon.

It is difficult to determine at what level of the bowel a drug produces stimulation proximally and inhibition distally, or the contrary. It evidently is not at the ileocecal junction. We believe that this change is a gradual transition occurring in the lower foot or two of ileum.

COMPARISON OF INTESTINAL MOTILITY IN MAN AND DOG

Results of studies by other observers and of our own observations reveal several similarities and differences in the motility of the bowel of man and dog. The small intestine of these species has a comparatively similar structure and function. That of the dog is shorter and accomplishes the function of digestion and assimilation more completely for equal lengths of gut, but this would be expected because of the more concentrated nature of its food. The character of movements is quite similar. An increased motility following feeding is more apparent in the dog than in man. The action of various drugs employed under these conditions of experimentation were identical.

The motility of the colon of man and dog, however, varies greatly. This would be expected because of the differences in function and in anatomic structure. Man has a well developed proximal colon while the dog has a short colon which functionally is chiefly distal colon. Greater absorption of water takes place in the small intestine of the dog, and there is less need for prolonged retention in the proximal colon.

Those drugs which stimulated motility in the small bowel of man, namely morphine, prostigmine methylsulfate, physostigmine and mecholyl, had a definite and constant inhibiting influence on the tonus and motility of the colon. In the dog the same inhibition of the colon was not noted. Morphine increased both the tonus and the peristalsis. This can explain the frequent bowel evacuation following the administration of morphine to dogs. Prostigmine methylsulfate strongly contracted the dog's entire colon, sometimes producing spasms. This was never seen in our patients. Those drugs which caused strong and repeated contractions of the human colon, namely solution of posterior pituitary and pitressin, did not produce the same response in the colon of the dog. Although at times there was a slight suggestion of increased activity, in most studies stimulation could not be detected.

FACTORS PRODUCING POSTOPERATIVE DISTENTION

The information learned from these observations suggests a number of factors which may be responsible for the development of postoperative distention and gas pains. It is routine practice to administer morphine to patients before and for one or two days after operation. This maintains a constant stimulation to motility of the small bowel but inhibits colon contractions. Except when intestinal obstruction, peritonitis or paralytic ileus exists, postoperative distention is due to gas in the colon. This fact is substantiated by roentgenograms. It is likely that the paralyzing effect of morphine on the colon prevents this organ from contracting and permits it to become overdistended with gas.

The prevention and relief of pain are essential to surgical patients, and the opiates are most satisfactory to accomplish this. However, it usually is unnecessary to continue their administration for more than a few hours after operation. By discontinuing their use as early as possible, the colon usually will recover its tonus and motility before distention occurs. If the prolonged use of morphine is indicated, its pharmacologic action on the bowel may be counteracted by the use of small doses of solution of posterior pituitary. This drug is of value also in treating distention which is confined to the colon.

Fortunately paralytic ileus is a less frequent complication of surgery. When it is due to a diffuse peritonitis it is doubtful whether the intestine will respond to any type of stimulation in the early stages. Distention then is best combated by keeping the gastrointestinal tract as empty as possible by the use of constant suction in the duodenum or farther down the small bowel. The colon should also be kept empty by means of enemas or suction applied to colon tubes. When recovery from peritonitis begins, motility of the small bowel often can be encouraged by the use of drugs which have a stimulating action on it. Prostigmine methylsulfate is of value here unless there is some indication for the use of morphine. These drugs in combination with suction are of value also in treating paralytic ileus not due to peritonitis.

By an understanding of the normal physiology of intestinal motility, the causes of its disturbances and the action of various drugs on it, one can avoid much postoperative discomfort and can institute rational treatment of postoperative distention.

SUMMARY

Human intestinal motility has been studied on a number of patients who, as the result of surgical procedures, have had various portions of the small and large intestine exposed, permitting direct visual observation.

A contrary motility between small and large bowel has been noted. When the small bowel is vigorously contracting, the colon is inactive. When the colon contracts, the small intestine appears to be inhibited.

Those drugs, including the opiates, physostigmine, prostigmine methylsulfate and the choline derivatives, which stimulate motility of the small bowel inhibit the colon.

Solution of posterior pituitary and pitressin produce powerful contractions of the colon but diminish motility of the small bowel.

Postoperative distention may be due to the paralyzing action of morphine on the colon.

25 East Washington Street.

FIVE YEAR CONTROL OF BLADDER CANCERS BY RADON IMPLANTS

BENJAMIN S. BARRINGER, M.D.
NEW YORK

There is no body cancer which is as well adapted for attack by radon implants as bladder carcinomas. Notwithstanding that these tumors are radioinsensitive, their accessibility to cystoscopic view and suprapubic exposure, their long confinement to the bladder, the flexibility of radon seed implantation and the possibility of early diagnosis all contribute to place bladder cancers in a unique class for control by radon implants.

Cystoscopy in a fourth of all cases offers a means of both seeing and implanting the entire tumor. Because of size, position or bleeding, three fourths of all bladder cancers have to be subjected to suprapubic cystotomy, both to view completely and implant accurately the tumor with radon seeds. Such an operation has a relatively low mortality; 5 per cent as top, 3 per cent as low, if cases are carefully worked up.

Papillary cancers of the bladder are confined to the bladder for a long period and are generally slow to metastasize. Because of this there ought to be a high percentage of five year cures. The fact that most of them are situated in the base of the bladder contiguous to ureters and urethra has made surgical removal difficult, hazardous and in many cases impossible. This accounts for the growing popularity among urologists of the operation of total cystectomy. What has been a hindrance to surgery has been a help to radon implantation. The base of the bladder is practically immobile as contrasted with the constantly mobile upper bladder. In the male underneath the bladder base is the prostate and the tissues beneath the trigone. This gives a substantial depth of tissue to back up the radon seed implants. In the female there is less depth of tissue, and radon implants have of necessity to be more superficial.

Infiltrating cancers are quite different. Often they do not show the early hematuria of papillary cancers; they readily grow through the bladder wall and metastasize early. Because they do metastasize early I cannot see that total cystectomy can offer any more than radon implants. Both are at a disadvantage. If the infiltrating tumor has grown through the bladder wall, radon implantation has, I believe, an equal chance with total cystectomy of cure. There is the much higher mortality of the latter to be considered.

Of 257 personal cases of bladder cancers seen up to and including the year 1937, 112 were papillary cancers and 145 infiltrating cancers. Of the 112 papillary tumors 3 were operated on palliatively, and of the 145 infiltrating tumors 12 were either not operated on at all or operated on for palliation. These 15 cases are excluded from the statistics because some of them had metastasis, in some the bladder was merely felt through the suprapubic opening and in some radon was implanted because of hematuria.

This leaves us with 109 papillary tumors and 133 infiltrating tumors. Of the 109 patients with papillary tumors the bladder tumors of 20 were proved cured, but they died of some intercurrent disease or were lost track of before the five year period.

From the Memorial Hospital.
Read before the Section on Urology at the Ninety-Third Annual Session of the American Medical Association, Atlantic City, N. J., June 11, 1942.

The same was true of 12 of the 133 infiltrating tumors. This leaves us with the following percentage of five year cures:

Of 89 patients with papillary cancer there were 50, or 56.1 per cent, who were well for five years.

Of 121 patients with infiltrating cancer there were 35, or 28.9 per cent, who were well for five years.

Of 210 patients with combined papillary and infiltrating cancer, 85, or 40.4 per cent, were well for five years.

PATHOLOGY

The pathologic diagnosis in all these cases has been made by examining pieces of the tumor obtained either cystoscopically or at the suprapubic exposure. It is never possible to obtain the entire tumor with its base for examination. Because of this the diagnosis has been modified by the clinical observations. If a tumor is reported as papillary cancer and if at operation the base of the tumor is found to be indurated, that tumor is classed as infiltrating rather than papillary cancer. Such induration is gaged both by the actual feel and by the sense of resistance felt by the needle bearing radon seeds. These two methods are extremely accurate in determining induration and therefore classifying the tumor as infiltrating.

In 17 cases there was no pathologic diagnosis or a diagnosis of papilloma. But 3 of these 17 are reported as five year cures. Thirteen patients died of cancer and 1 was lost track of. This indicates that the clinical diagnosis in these 17 cases was accurate.

In our series "papillomas with atypical cells" were classed as papillary carcinoma. The malignancy in this class of cases has been doubted by some pathologists and urologists. There is no question that a small percentage of these tumors have been easily cured by various methods, such as fulguration, excision and roentgen rays, and do not act like malignant tumors. By far the larger percentage, however, have all the attributes of real malignancy. They react badly or not at all to fulguration and they tend stubbornly to recur. There is no pathologic or clinical means whereby one may distinguish between these two groups, and until there is it is only fair and safe to group them under one class, papillary cancer.

THE SUPRAPUBIC OPERATION

There have been some slight modifications of the suprapubic operation for the implantation of radon seeds as described some years ago. Perhaps the most important is the use of sulfathiazole crystals following the implantation, both in the bladder and in the suprapubic wound. Many of these tumors are badly infected. If the infection can be limited by the use of sulfathiazole, much has been gained. Second, the radon seeds are not as strong (between 1 and 1.5 millicuries) and are not planted as near together as formerly: one seed to 1 square centimeter. Also if the tumor base is badly indurated the seeds are not planted as deeply as formerly, not more than 1 cm. in depth.

If the tumor is directly over one ureter orifice and there is both hydroureter and hydronephrosis, then an attempt is made to place a large ureteral catheter (8 F.) in the ureter at the time of the cystotomy operation. This is left in place several days. By this means it has been possible to save some kidneys and prevent an infection of a hydronephrotic kidney.

A case in point is as follows:

J. J., a man admitted to the Memorial Hospital on Oct. 17, 1939, was shown by cystoscopy to have an extensive bladder

carcinoma, centering over the left ureteral orifice. The orifice could not be identified. Pathologic examination revealed "epidermoid carcinoma grade 3." The intravenous pyelogram showed a left hydroureter and left hydronephrosis. A suprapubic cystotomy was done and a papillary tumor 4 by 3 cm. in diameter was seen and implanted with radon gold seeds totaling 32.97 millicuries (4,395 millicurie hours). An 8 F. catheter was inserted into the left ureter, the end being brought out of the suprapubic wound, and left in place for three days. The highest postoperative temperature was 102 F. This gradually dropped and became normal eight days after operation. On April 3, 1940 an intravenous pyelogram showed no hydronephrosis and but a moderate dilatation of the left ureter for a short distance above the bladder. A 6 F. catheter was passed with some difficulty up the left ureter. He had no tumor. In January 1942 his condition was excellent.

All in all we are cutting down infectious slough of the tumor base and bladder, infection of the suprapubic wound and infection of the kidneys.

DETAILS OF 257 CANCERS OF BLADDER

Size of Base.—In 235 of the 257 cancers there are definite records of the size of the tumor base. But 5 were less than 2 sq. cm., 92 were from 2 to 10 sq. cm. and 138 (58 per cent) were more than 10 sq. cm. This indicates the large size most bladder tumors reach by the time they are seen at the hospital.

Situation.—The site of the tumor was stated in 243 cases. Of these 195 (80 per cent) were on the bladder base involving or near the internal urethra or one or both ureters.

Patients Well Over Ten Years.—Twenty-one patients are well after the lapse of ten years or more. The oldest patient was well for some twenty-two years, when she died at the age of 92.

Kind of Treatment.—Suprapubic implantation was done 183 times and cystoscopic implantation 89 times in the 257 cases. These figures indicate that in 85 cases a combination of suprapubic and cystoscopic implantation was done to control the tumor. An attempt to cure bladder tumors by means of cystoscopic implantation of radon seeds should be made in all cases in which the tumor is in a position to be readily seen in its entire extent and when the tumor is not too large. This applies to both papillary and infiltrating growths.

Complications of Radon Seed Implantation.—Stone formation on the dead tumor base is probably the most important complication. This means careful and repeated cystoscopy and removal of any calcareous deposits by the cystoscopic forceps. Occasionally the stone has to be crushed and washed out with a stone evacuator. And in a very few I have had to remove a stone by suprapubic cystotomy.

I have had 2 cases in which vesicovaginal fistula followed the radon seed implantation. One of these patients died at the end of five years of cancer and 1 was cancer free when she died at the end of five years of a kidney complication.

Surgery of Bladder Tumors.—There is no doubt in the mind of any urologist that the surgical removal of many bladder cancers is entirely possible. As far as my point of view goes the tumors of the bladder vault do best following surgical excision. These are apt to be highly malignant and metastisize to the lymphatics around the urachus. These tumors should be widely removed together with the paracystic tissues. I say this because I have had such cases in which radium has failed and in which operation has succeeded. Proof enough.

There is another bladder tumor in which total cystectomy is indicated. This is the widely disseminated papilloma or papillary carcinoma. No other treatment can cope with this disease.

As far as my experience goes, all other tumors both papillary and infiltrating are better dealt with by radon implantation. While there may be differences of opinion as to the best treatment of tumors of the lateral walls, I believe that there is little question of the superiority of radon implants in tumors over or near the ureter orifices, the trigone or the internal urethra.

SUMMARY

Bladder cancers both papillary and infiltrating are well adapted for attacks by radon implants.

In 257 cases seen up to and including 1937, 112 were papillary and 145 infiltrating.

Excluding 15 cases, in most of which there were metastases and palliative operation was performed, 56.1 per cent of patients with papillary cancer are well for five years and 28.9 per cent with infiltrating cancers well for five years. Combined there is a five year cure rate of 40.4 per cent.

Both the suprapubic and the cystoscopic route have been used to apply radon seeds, the latter in about one fourth of all cases.

The chief complications of radon implantation are infection and stone formation. These are becoming less with modifications of the original technic of implantation.

Tumors of the bladder vault and extensive papillomatosis are better dealt with by surgery alone. In all other bladder cancers radon implantation is simpler to effect, has a lower operative mortality and gives more assurance of five year cure.

114 East Fifty-Fourth Street.

ABSTRACT OF DISCUSSION

DR. GEORGE G. SMITH, Brookline, Mass.: I agree in many respects with what Dr. Barringer has said about the use of radium. I have used it for many years. The use of radium has settled down into a fairly well defined groove. Any tumor which is not a perfectly frank, benign papilloma should be treated with radium or resection, in addition to electrocoagulation. I have been disturbed in reading case records submitted by candidates for the Board of Urology to find that radium is used very little. Men often say it would have been a suitable case in which to use radium but the seeds were not available. Of course, they could have been obtained from one of the supply houses if the situation had required their use. I deplore the custom which seems to be quite universally followed, particularly since the introduction of the resectoscope, of resecting a fairly good sized, broad based tumor, perhaps a tumor with a base 1 or 2 cm. in diameter, and coagulating the base with the resectoscope, without implanting radon around the base of the tumor. The immediate results have been good, the results a year after have been good, but I wonder what they will be in three or four years. I agree with Dr. Barringer that the case of multiple papillary tumors is the type in which cystectomy is the most valuable method. I have treated some of those patients in which the low grade tumors have recurred time and time again. I have treated them with electrocoagulation and implantation of radon until the bladder has become a small, shrunken, sclerotic organ which bled freely and which in 2 cases had to be removed because of intractable bleeding. In 1 of those cases no tumor was found, in the other not much tumor. I believe that total cystectomy would have been much better in the beginning. Dr. Barringer has said nothing about the use of high voltage roentgen therapy. I am not clear as to how effective it is going to be. Dr. Colby has been much interested in this form of therapy and has treated a number of patients, often with very good results, although I think he feels that

absolute cure is seldom achieved. There is a type of extensive tumor of the bladder in which the area of the bladder involved is so great that I would not want to put radon enough in the tumor to control the growth. In those cases I think one might do a frankly palliative electrocoagulation, might try roentgen treatment, or, if on opening the peritoneum, one finds no evidence of metastases, one might employ total cystectomy, at least relieving the patient of a dirty, sloughing ulcerative bladder. Even if the patient dies from recurrence he is probably going to die more comfortably than he would from carcinoma of the bladder.

DR. B. S. BARRINGER, New York: I have talked to Dr. Colby about high voltage roentgen therapy and I think his ideas are sound. He believes that if one has a very large tumor which can't be handled in any other known way, if one subjects that patient to high voltage roentgen therapy the tumor may shrink enough to do something else with it, preferably to implant it with radon seeds either suprapubically or through the cystoscope. I have had quite a number of such cases in which one uses roentgen rays, radon seeds and fulguration, and queerly enough with a certain amount of persistence some of them get well. Not a large percentage, certainly. All in all, however, high voltage roentgen therapy has in bladder tumors a very limited sphere of usefulness.

Clinical Notes, Suggestions and New Instruments

CHRONIC ANEMIA AND LEUKOPENIA IN COMBINED ACETANILID AND AMINOPYRINE POISONING

V. THOMAS AUSTIN, M.D., URBANA, ILL.

Acetanilid and aminopyrine are both widely distributed in proprietary nostrums. Each has been shown to produce serious toxic reactions in susceptible persons or under circumstances of excessive dosage. Despite this fact and because they are highly efficient analgesics, tons of these drugs are sold annually to an unsuspecting public. As early as 1886 [1] case reports of acetanilid poisoning began to appear in the literature. However, it was not until 1934 that Madison and Squier [2] presented the initial evidence that aminopyrine in a hypersensitive person produces serious or even fatal neutropenia.

Acute acetanilid poisoning is comparatively uncommon.[3] It follows overdosage or in the susceptible person may result from an ordinary therapeutic dose.[4] The symptoms cyanosis, prostration and collapse may appear within a few hours. A number of deaths have been reported.[5] Chronic acetanilid poisoning is more frequent than is generally appreciated. Symptoms are not always pronounced, and patients addicted to the use of acetanilid are characteristically secretive regarding its use.[6] The principal manifestations are cyanosis, anorexia, cachexia, anemia, varied psychic and neurologic disorders, lassitude, insomnia and headache. As headache is often the complaint for which the drug was originally taken, a vicious cycle is established. Splenomegaly occurs occasionally, as was pointed out by Herrick and Irons in 1906.[7] Toleration develops, and enormous doses of acetanilid have been taken without immediate untoward effect.[8] The insidious aspect of chronic poisoning is the habituation, and it frequently parallels the degree of tolerance.[8] Withdrawal symptoms occur and are often alarming. Acute mania may develop, and Payne [9] has reported a completely quieting effect from as little as 0.3 Gm. of acetanilid in such a case. The case reported here is an instance of chronic acetanilid poisoning in which an associated neutropenia may have resulted from a hypersensitive reaction to aminopyrine.

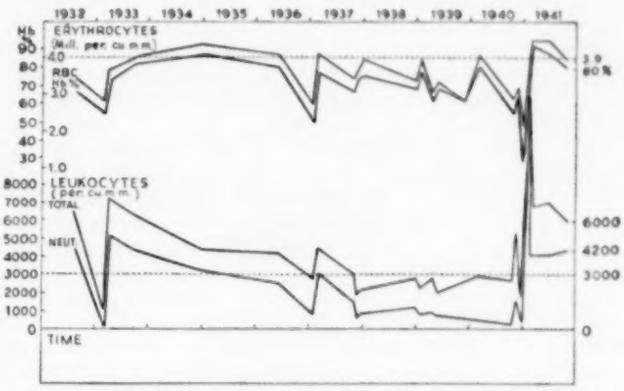

Chart 1.—Graphic record of interval blood counts over a nine year period. The crisis in 1941 is better illustrated in chart 2.

REPORT OF CASE

A white woman aged 44, who had been observed at intervals over a period of nine years, complained of headache, lassitude, depression, weakness, anorexia and insomnia. During the first four years these symptoms were intermittent and punctuated by attacks of severe neutropenia, anemia, fever and gingivitis. Temporary improvement would follow hospitalization and intramuscular injections of pentnucleotide. During the next four years the symptoms were more continuous, with progressive loss of weight, dyspnea, palpitation and frequent infections of the upper respiratory tract. Splenomegaly, observed in 1933, became gradually more pronounced. Gingivitis, at first mild and associated with the exacerbations, became chronic and progressive. The early lassitude was followed by inability to concentrate, definite personality changes, carelessness regarding household duties and finally delusions of infidelity regarding her husband. Cyanosis of the lips and mucous membranes appeared intermittently during 1940.

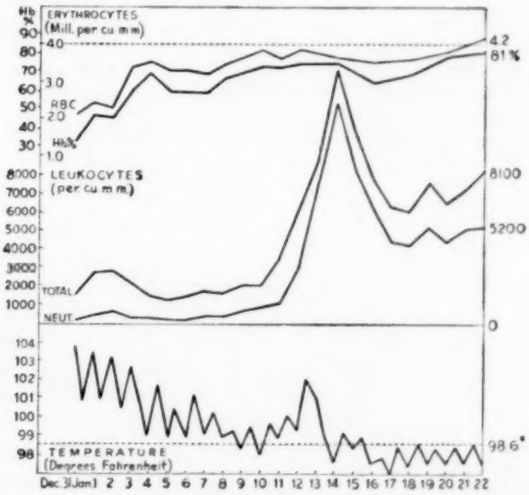

Chart 2.—Composite record of the blood picture and rectal temperature during hospitalization.

Throughout her illness, significant changes were present in the blood picture. These are shown graphically in chart 1. The episode of profound neutropenia in 1933 was diagnosed agranulocytic angina, but this did not satisfactorily account for the anemia. After the discovery in 1934 [2] that aminopyrine

From the Department of Medicine, Carle Hospital Clinic.

Read before the regional meeting of the American College of Physicians, Chicago, Dec. 6, 1941.

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was responsible for neutropenia in certain cases she was questioned repeatedly regarding the use of drugs. From 1937 till 1941 her leukocytes were never found to number more than 3,000 and there was a progressive decline in the percentage of neutrophils. Likewise there was a persistent normocytic anemia. Treatment during this period consisted in the administration of iron, intramuscular liver extract and pentnucleotide. It is significant that pentnucleotide was ineffective unless the patient was in the hospital.

During an exacerbation of symptoms in November 1940 the urine was normal. The reticulocyte count was 16.3 per cent, without previous liver therapy. The platelets numbered 246,000. Bleeding and coagulation times were normal. The icterus index was 7. There was an apparent response to intramuscular liver extract with an improved leukocyte count on December 16. A few days later an infection of the upper respiratory tract occurred and she was confined to bed. A tender grape-sized nodule appeared in the left axilla. This gradually diminished in size, but previous symptoms became aggravated and on December 31 she was admitted to the hospital.

Chart 2 represents a composite picture of the blood and temperature changes during hospitalization. On admission she appeared to be acutely ill. There was a pallor and cyanosis of the face, mucous membranes and nail beds. She was moderately dyspneic. The heart and lungs were normal, and the blood pressure was 130 systolic and 80 diastolic. The gums were inflamed, ulcerated and retracted, and the teeth very loose. The spleen came down 3 fingerbreadths below the costal margin. At this time the hemoglobin measured 33 per cent and there were 2,190,000 erythrocytes and 1,600 leukocytes per cubic millimeter. There were 19 per cent neutrophils. The reticulocytes numbered 20.6 per cent, with an occasional normoblast. A urinalysis gave negative results. The blood urea measured 20 mg. per hundred cubic centimeters. On December 31 and again on Jan. 2, 1941 she was given transfusions of 500 cc. of whole blood. An initial apathy and confusion was followed by an agitated delirium with generalized muscular twitching and almost constant grimacing with sucking movements of the lips. This was followed on January 10 by frequent generalized convulsions with interval coma. The pupils were normal. There was definite nuchal rigidity. The deep reflexes were hyperactive, but the Babinski sign was absent. A lumbar puncture revealed clear fluid under normal pressure with 1 small lymphocyte per cubic millimeter, no globulin, a normal colloidal gold curve and a negative Wassermann reaction. At this time the blood calcium was 10.7 mg. per hundred cubic centimeters. The carbon dioxide combining power of the blood during a convulsion was 28 volumes per cent. The next day it was 44 volumes per cent. Dr. Israel

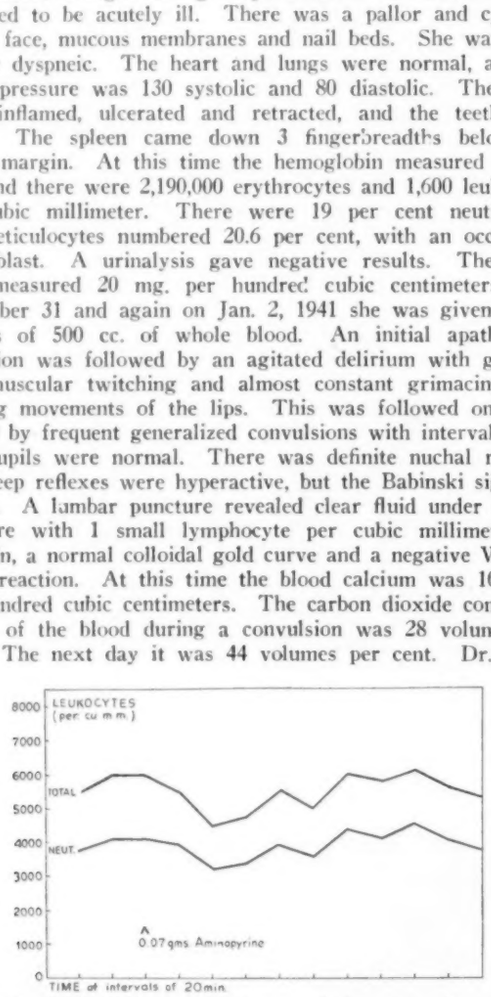

Chart 3.—Leukopenic response to an oral dose of aminopyrine following recovery.

Davidsohn examined smears of the bone marrow obtained by sternal puncture on January 11. At this time the qualitative picture of the granulocytes was relatively normal, but he found a definite increase in the number of erythroblasts.

The aforementioned nodule in the left axilla was again observed on January 7 to be sensitive, with signs of local cellulitis. This rapidly increased in size and became fluctuant on January 14. At this time it was incised and drained of 1 ounce (30 cc.) of thick pus showing many staphylococci on smear and culture. Within several hours the convulsions ceased and the patient became rational. Improvement followed rapidly, and she was discharged from the hospital on January 22 with a normal blood count.

Shortly after the patient's admission to the hospital it was discovered that she had been taking preparations containing acetanilid and aminopyrine surreptitiously for years. The former was present in Dr. James' Miniature Headache Powders, which she had used daily for sixteen years. According to the manufacturers, each powder contains 2½ grains (0.16 Gm.) of acetanilid in combination with caffeine and sodium

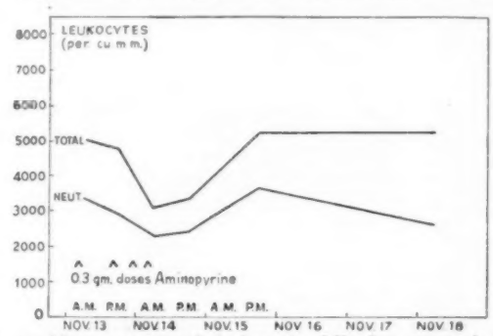

Chart 4.—More pronounced leukopenia following repeated 0.3 Gm. oral doses of aminopyrine. This was followed by a rather prolonged neutropenia.

bicarbonate. The latter was present in aminaneonal, a combination of 4 grains (0.26 Gm.) of aminopyrine and 1½ grains (0.1 Gm.) of a barbiturate. For at least nine years the patient had been taking this drug without realizing that it contained aminopyrine. Based solely on her charges at a local drug store it is estimated that during the month of December her average daily consumption was 12½ grains (0.8 Gm.) of acetanilid and 12 grains (0.8 Gm.) of aminopyrine.

Since leaving the hospital the patient has taken no medicine of any kind. She no longer suffers from headache. Her color is good. She has gained 20 pounds (9 Kg.) and she is now cheerful and mentally alert. As seen in chart 1, blood counts had remained normal. The splenomegaly, present for nine years, subsided rapidly, and by February 25, one month after leaving the hospital, the spleen was no longer palpable. However, the teeth remained loose and a full mouth roentgenogram revealed pronounced degeneration of all supporting structures of the teeth. During April Dr. Thompson did a complete upper and lower alveolectomy.

COMMENT

There is no doubt that the patient was chronically poisoned with acetanilid, as manifested by the cyanosis, anorexia, cachexia, psychosis, splenomegaly and severe withdrawal symptoms. Likewise the chronic anemia with hyperplasia of the erythropoietic tissues, evidenced by the high reticulocyte count and the bone marrow studies, is typical of acetanilid poisoning. On the other hand, persistent neutropenia with severe crises has not been observed, so far as I have been able to determine. Kracke[10] in 1938 gave an excellent review of the drugs responsible for neutropenic states. In the consideration of acetanilid, he felt that the existing evidence was inadequate. He referred specifically to the cases of Watkins,[11] Hudnutt[12] and Groen and Gelderman,[13] as well as to his observation of neutropenia in a person taking Dr. Miles' Nervine. Lowy and Helms[14] observed a mild transitory leukopenia in 5 human subjects given 11 grains (0.7 Gm.) of acetanilid daily, six days a week, for from seven to twenty-one weeks. They reported that the blood returned to normal in spite of continued administration of the drug.

It therefore becomes necessary to consider aminopyrine as an agent responsible for neutropenia in this case. The clinical

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12. Hudnutt, O. D.: Case of Agranulocytosis with Recovery Following Administration of Concentrated Liver Extract, J. Michigan M. Soc. **34:** 440 (July) 1935.
13. Groen, J., and Gelderman, C. J.: Agranulocytose (maligne neutropenie) door Geneesmiddelen, Nederl. tijdschr. v. geneesk. **78:** 34-44 (July 28) 1934.
14. Lowy, O., and Helms, S. T.: Physiologic Effect on Human Subjects: Preliminary Study, M. Rec. **140:** 561-563 (Nov. 21) 1934.

course is not incompatible with this view. In the nine year record there were periods of neutropenia with only slight anemia. Accurate history is not available, but these may have been periods of greater aminoneonal and diminished acetanilid consumption. Severe episodes of anemia were always accompanied by neutropenia. It is possible that at these times increased consumption of acetanilid occasioned the usual insomnia for which greater amounts of aminoneonal were taken. This is substantiated by the patient's history.

In an effort to prove relationships between aminopyrine and neutropenia in this case, tests for specific sensitivity were conducted. A number of investigators [15] have administered test doses of the drug to patients recovered from aminopyrine neutropenia. Varying degrees of neutropenia have been produced. The results of our first experiment are shown in chart 3. In accordance with the proposal of Doan,[16] 1 grain (0.065 Gm.) of aminopyrine was given by mouth followed by estimations at twenty minute intervals of the total leukocytes and neutrophils. A rather significant drop below the control level was observed in forty minutes, with a rapid return to normal. Next, the patient was given 20 grains (1.3 Gm.) of aminopyrine in divided doses over a twenty-four hour period. Chart 4 shows the results of this experiment. A more substantial decrease in the leukocytes and neutrophils was observed at the end of this period followed by a return to the previous normal level. This response compares favorably with that in 1 of the 4 cases in which similar tests were given by Dameshek and Colmes,[17] in which sensitivity to aminopyrine had been well established. In 2 of their cases a definite neutropenia was observed, while in the fourth no response followed oral administration of the drug.

Finally, following the procedure of Dameshek and Colmes, intradermal tests were made with (1) a 5 per cent solution of aminopyrine, (2) "serumized aminopyrine," prepared by refrigerating a mixture of the patient's serum with 5 per cent aminopyrine and (3) the patient's serum as a control. A definitely positive reaction occurred with "serumized aminopyrine." The other two tests gave negative results. A single control patient gave negative results to all three injections. The positive cutaneous reaction to "serumized aminopyrine" was found by these investigators to be quite specific for aminopyrine hypersensitivity. In 2 of their cases severe neutropenia developed after the intradermal "test." My patient showed no change in the total leukocytes, but it is interesting that after these three procedures the percentage of neutrophils declined from a previous 70 per cent or more to less than 50 per cent. This persisted for four weeks. There was no substantial change in the hemoglobin or erythrocytes.

Should the neutropenia in this case have been due to aminopyrine, as seems likely, it was more chronic and the "anaphylactic" reaction less dramatic than usual. The patient's response to the various tests are in line with this aspect of the clinical course. It does not necessarily follow that these two drugs acted independently of each other to produce the anemia and the leukopenia. It may be that one served as a conditioning factor to alter the toxic effect of the other. Rhoads and Miller [18] have so conditioned dogs by deficient diets that they became seriously anemic when given aminopyrine or crystalline indole, whereas neither diet nor aminopyrine or indole alone was similarly effective. It would have been interesting to test the patient with acetanilid alone. However, this was considered unwise because of the danger of reestablishing habituation.

The cyanosis in chronic acetanilid poisoning is a valuable diagnostic sign, but unfortunately it is not always present. Its mechanism is poorly understood. It seems to be due in part to the presence in the blood of dark colored oxidation products of para-aminophenol and also to the presence of methemoglobin and sulfhemoglobin.[19] Severe neurologic disorders may follow abrupt withdrawal of acetanilid, but convulsions have not been reported in human beings. It is significant, however, that Payne [9] observed them in one of two dogs in which he studied the abstinence syndrome of acetanilid. Of course, it is possible that in this case the associated neutropenia and sepsis contributed to the convulsions.

SUMMARY AND CONCLUSIONS

In a case of chronic acetanilid poisoning an associated neutropenia appears to be related to aminopyrine hypersensitivity. As far as I can determine, this combination of effect, or possible conditioning action of one drug for the other, with resultant anemia and neutropenia, has not been previously reported.

Addiction to acetanilid may be profound, and the associated psychic changes with secretive self medication may interfere with early diagnosis.

Convulsions following abrupt withdrawal of acetanilid have not been reported in human beings. They might not have occurred in this case had it not been for the associated neutropenia and sepsis.

The progressive inflammatory degeneration of all supporting structures of the teeth is quite unusual and presumably developed on the basis of a persistently lowered leukocytic barrier.

The splenomegaly of chronic acetanilid poisoning though present for years is rapidly reversible.

602 West University Avenue.

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From the Department of Pediatrics, State University of Iowa College of Medicine.

Special Article

HANDBOOK OF NUTRITION: XIX

THE FEEDING OF HEALTHY INFANTS AND CHILDREN

PHILIP C. JEANS, M.D.
IOWA CITY

These special articles on foods and nutrition have been prepared under the auspices of the Council on Foods and Nutrition. The opinions expressed are those of the authors and do not necessarily reflect the opinion of the Council. These articles will be published later as a Handbook of Nutrition.—ED.

THE FEEDING OF INFANTS

Human milk commonly is considered the ideal food for the young infant, presumably supplying all nutritional essentials for the early period with the exception of adequate vitamin D. When human milk is not available, cow's milk is the material most commonly used in substitution. It seems desirable to review the comparisons of these two foods as to their contents of various nutritional essentials and their effects on the growth and body composition of the infant. Comparative contents of the two milks are shown in tables 1 and 2.

The protein requirement of the infant commonly is stated on the basis of the average amount received in human milk when he is making good growth progress. The amount of protein received by the young infant under these circumstances is 2 to 2.5 Gm. for each kilogram of body weight. Acceptance of the concept,

not clearly proved, that human milk protein is biologically superior to cow's milk protein by a factor approximating 20 per cent makes the requirement of the young infant for cow's milk protein 2.5 to 3 Gm. for each kilogram. It is a common practice to supply the young artificially fed infant with at least 1½ ounces of milk for each pound of body weight. This amount is equivalent to 100 cc. for each kilogram and a protein intake of 3.4 Gm. for each kilogram, an amount in excess of the theoretical requirement as based on the assumed requirement for human milk. Many pediatricians prescribe even larger quantities of milk.

Observations have been made on the effect of ingestion of the larger quantities of cow's milk in comparison with the effects of feeding human milk. In chart 1 are shown the percentages of nitrogen content of infants when they are given these two types of food. After birth the percentage of nitrogen content of babies receiving cow's milk increases in a curve smoothly continuous with the curve of prenatal content [1] and in a manner comparable to the curve predicted by Moulton [2] for the fat free animal body. On the other hand, when human milk is fed, a sharp change in direction of the curve of percentage composition occurs after birth and for a time the proportion of nitrogen in the body remains at the birth level or decreases slightly.[1]

Somewhat similarly to the body content of nitrogen, the percentage calcium content of the body differs after birth with human and cow's milk feeding.[1] As shown in chart 2, a decrease occurs with both types of feeding for several weeks after birth, after which period the body content with cow's milk feeding starts to rise, while that with human milk feeding continues to fall for several weeks more and probably does not reach the birth value before the baby is 1 year of age. The calcium of human milk is used more efficiently than that of cow's milk, but the total retention from cow's milk is far greater because of the larger quantity fed. The

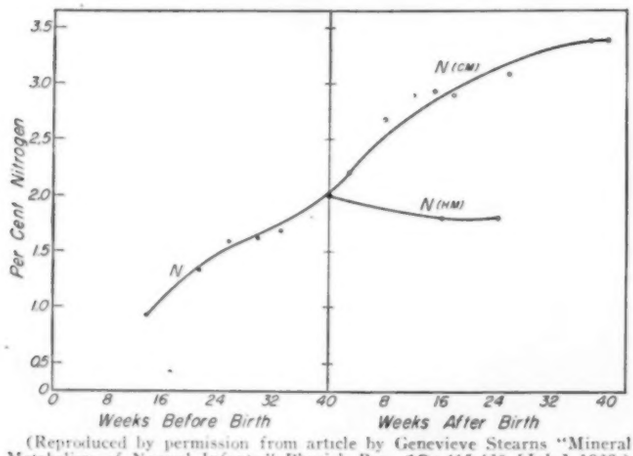

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Chart 1.—Changes in relative nitrogen content of fetus and infant. The regression line of nitrogen content of the fetus is drawn from data in the literature. *C. M.*, infants fed cow's milk; *H. M.*, infants fed human milk. (Redrawn from Stearns: Mineral Metabolism of Normal Infants.[1])

calcium retention of the baby fed cow's milk is as great as or greater than the intake of the breast fed baby.

The significance of these various differences in body composition of the infant is not clear. One interpretation could be that a wide range of normal exists and that these differences are of no significant importance. The period of time during which these differences exist is relatively short compared with the life span. The differences disappear soon after the differences in diet cease to exist. While this point of view may be acceptable for the baby born at term, it seems inappropriate for the baby born prematurely, at least as concerns

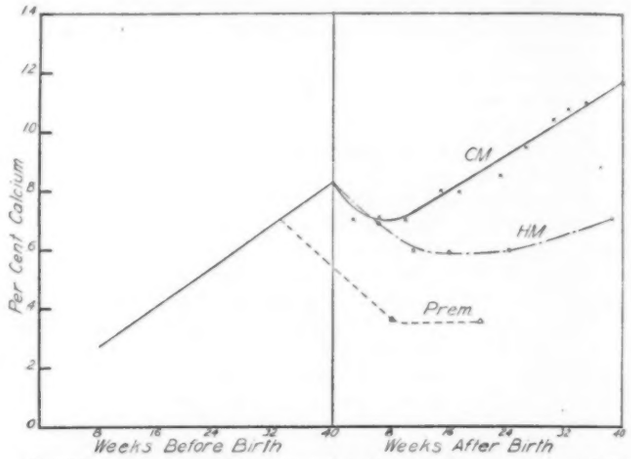

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Chart 2.—Changes in relative calcium content of fetus and infant. The regression line of calcium content of fetus is drawn from data in the literature. *C. M.*, infants fed cow's milk; *H. M.*, infants fed human milk; *Prem.* prematurely born infants fed human milk. (From Stearns[1] by permission of Physiological Reviews, Inc.)

calcium. The chief reason the prematurely born baby is highly susceptible to rickets appears to be the low calcium content of the body at birth and the difficulty of supplying sufficient of this material after birth. Human milk cannot be ingested in sufficient amounts to supply the calcium need unless it is fortified or supplemented with calcium or a calcium containing food.

In explanation of the high calcium content of the baby fed cow's milk as compared with the baby fed human milk, and perhaps with the justifiable concept that human milk is the ideal food, the idea has been advanced that the baby fed cow's milk is supermineralized. Eliot and Park [3] interpreted the results of their study of the bones of newborn babies as indicating that calcium is present in sufficient amount to represent storage. This interpretation was accepted by Hamilton,[4] who expressed the belief that the relative calcium loss in early infancy represents utilization of stores and is normal. After 3 months of age the rate of percentage of calcium increase in the body when cow's milk is fed parallels the fetal rate, a condition which, if it does not represent physiologically normal growth, at least produces storage. Storage to this extent certainly is not harmful, and it may well be considered useful during periods of illness when calcium utilization is impaired. The rate of calcium increase after 3 months of age for the baby fed cow's milk is similar to the rate of increase of the ash content of the fat free animal body as predicted by Moulton.[2]

Linear growth of babies fed a standardized cow's milk formula is related to the amount of calcium retained.[5] The differing retentions with the standardized

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diet are obtained by varying the vitamin D intake. Babies with poor retentions grow at average or less than average rates, while those with higher retentions grow at rates greater than average. Thus the higher calcium retentions would appear to be definitely advantageous to the artificially fed infant. On the other hand the breast fed baby has excellent linear growth despite the much lower calcium retention and grows at a definitely greater rate than the artificially fed baby with the same calcium retention.[6] It becomes obvious from these and other facts that factors other than those under consideration enter into the rate of growth and that probably it is inappropriate to state requirement standards for the artificially fed baby based on the requirement of the baby fed human milk.

The greater nitrogen retention of the artificially fed baby must of necessity represent larger amounts of tissue protein in the body, since nitrogen is not stored in any other fashion. The larger part of the increase in tissue protein is represented in increase in muscle mass. Babies who are fed cow's milk in the larger of the customary quantities have approximately 25 per cent more muscle mass than babies breast fed.[7] This increase takes place soon after artificial feeding is started, after which time the muscle mass maintains a fairly constant relationship to the total body weight. Thus the muscle masses of breast fed and artificially fed babies increase in a parallel manner, but with larger values for those receiving cow's milk. No disadvantage seems to accrue to the breast fed baby because of the lesser amount of muscle. On the other hand nitrogen retentions of the artificially fed baby of the same order of magnitude as those of the breast fed baby are associated with poorer tissue turgor and poorer motor development than are shown by artificially fed babies receiving the larger amounts of cow's milk and having higher nitrogen retentions. If these observations are correct, cow's milk formulas devised to simulate human milk in composition are not as useful as are formulas containing larger amounts of protein and calcium.

The phosphorus content of the body and the phosphorus requirement depend on the amounts of calcium and nitrogen retained. Consequently the requirement of the baby receiving cow's milk is somewhat greater than that of the infant fed human milk. The phosphorus content of human milk is much less than that of cow's milk, but human milk contains an amount sufficient to meet the needs of the infant relative to the amounts of nitrogen and calcium retained. Cow's milk contains an excess to the extent that much more phosphorus is absorbed than can be used, the excess being excreted chiefly in the urine. Little or no phosphorus is excreted in the urine of the breast fed baby, whereas in the artificially fed baby 60 to 70 per cent of the total excretion is by way of the urine. The baby seems to accomplish the increased excretion without difficulty or damage.

Human milk is superior to cow's milk as a source of iron. Though human milk contains only from 0.5 to 1.5 mg. of iron to the liter, it contains on the average three times as much as does cow's milk. The iron stores of the body of the baby at birth are sufficient to permit maintenance of a normal hemoglobin level for several months, after which time additional iron is necessary. After 3 months of age with customary cow's milk formulas the iron retention is variable, but averages approximately zero; when human milk is fed, the average retention is approximately 0.11 mg. Neither of these iron intakes is satisfactory, for a retention of at least 0.7 mg. is required after 6 months to maintain the hemoglobin level.[8] Without additions the body of the baby becomes progressively poorer in iron. The iron content of human milk and its utilization are such that nutritional anemia is much slower to develop in the breast fed baby than in the artificially fed baby when no iron supplement is given.

Many times in the past the question has arisen whether the infant needs vitamin A in addition to that present in a customary diet and without the use of any of the fish liver oils. In the light of present knowledge of the requirement of the infant for vitamin A, the Food and Drug Administration has set the minimum requirement at 1,500 units daily and the Food and Nutrition Board of the National Research Council has recommended the same amount as a suitable allowance. For a baby 1 year old this amount is greater than that computed as optimum on the basis of weight from animal experiments when all the vitamin A is ingested as carotene. Thus the amount suggested appears to be ample even if supplied wholly by carotene. Computation shows that the required amount of vitamin A is supplied by milk alone, either human[9] or bovine,[10] if it is of average content. In the early months the breast fed baby receives more vitamin A than does the baby fed a cow's milk formula prepared by dilution. In addition to the vitamin A of the milk the early addition of orange juice makes a small contribution and the subsequent additions of egg yolk, vegetables and fruits permit an intake of vitamin A well above the requirement. Clinical observations also have shown that babies receiving a normal standard diet grow equally well whether or not they receive additional vitamin A in fish liver oil.[11] Thus for the average baby the important contribution of fish liver oil is vitamin D.

The ascorbic acid content of human milk varies directly with the intake of the mother[12] but in general is relatively large in comparison with the content of prepared cow's milk. An approximate average content of human milk in this country is 60 mg. to the quart,[12] whereas a cow's milk formula prepared by boiling and dilution may contain 6 mg. or less to the day's supply.[13]

6. Jeans, P. C., and Stearns, Genevieve: Unpublished data.
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Thus average human milk meets the present standard allowance for vitamin C, whereas the amount in prepared cow's milk is grossly inadequate. Even though the requirement is met by average human milk, the feeding of orange juice to the breast fed baby is in no way harmful and may be considered beneficial in those instances in which the mother's supply of this material is small.

The thiamine content of human milk varies widely and depends on the diet of the mother.[14] According to Knott and her co-workers,[15] milk from mothers able to supply their infants adequately contains more thiamine than milk from mothers whose babies require a formula supplement. The milk of the mothers of babies requiring supplement contained an average of 86 micrograms (29 units) to the quart. When the milk supply of the mother was adequate, the average thiamine content of the milk was 192 micrograms (64 units) to the quart. The larger of these two thiamine contents was observed when the intake of the mothers was approximately 1.5 mg. of thiamine daily. When the two groups of mothers were considered together, the average thiamine content of the milk was 144 micrograms (48 units) to the quart. Clements[16] observed symptoms of partial thiamine deficiency in 8 per cent of a group of 150 breast fed infants. The thiamine content of the milk was low in each case.

Table 1.—*Approximate Percentage Composition of Human Milk and Cow's Milk*

	Fat	Sugar	Total Protein	Lact-albumin	Casein	Total Ash	Ca	Mg	K	Na	P	S	Cl	Fe	Cu
Human milk.....	3.5	7.5	1.25	0.75	0.50	0.20	0.034	0.005	0.048	0.011	0.015	0.0036	0.036	0.0001	0.00003
Cow's milk.....	3.5	4.7	3.4	0.50	3.0	0.75	0.122	0.013	0.154	0.060	0.090	0.031	0.116	0.00004	0.00002

From Marriott, W. M.: Infant Nutrition, revised by P. C. Jeans, St. Louis, C. V. Mosby Company, 1941.

Cow's milk as fed to babies is subjected to heat treatment, which causes significant losses of thiamine as compared to the original milk. Data concerning the proportion of loss are few and not wholly in agreement.[17] Reference to the values shown in table 2 shows that heat treated cow's milk contains more thiamine than does human milk. However, cow's milk usually is diluted for feeding the young baby. Even with maximum customary dilution, the thiamine intake of the artificially fed baby equals or exceeds that of the breast fed baby when averages are considered.

The Food and Nutrition Board of the National Research Council has set a standard allowance for thiamine at 0.4 mg. (133 units) for infancy, the Food and Drug Administration a minimum requirement at 0.25 mg. (83 units). These values may be interpreted to indicate a requirement of 40 and 25 micrograms respectively for each kilogram of body weight. Knott has stated a probable requirement of 40 micrograms for each kilogram.[18] Though these standards are approached, only the Food and Drug Administration standard is fully attained by average human milk or by the average formula. It is by reason of these facts that questions have arisen as to the adequacy of the thiamine intake of the infant, particularly the breast fed infant. The breast fed infant, though he has no thiamine to spare, seems to do very well nutritionally. One difference between human milk and formulas of cow's milk is the higher proportion of calories from fat in human milk feeding. Slightly more than 50 per cent of the calories of human milk are from fat, while the calories from fat in a customary milk formula often are as low as 35 per cent. Thiamine is not concerned in fat metabolism, and fat consequently has a sparing action on this material. Therefore the thiamine requirement is more equally met in the two instances than seems apparent at first thought. In any case early supplement with thiamine containing foods is desirable.[16]

The riboflavin content of milk varies widely for the human being[19] and to a lesser extent for the cow,[20] depending on the intake. The average content of cow's milk is approximately five times that of human milk, and the baby's supply from human milk probably reaches only occasionally the minimum standard of 0.5 mg. daily set by the Food and Drug Administration or 0.6 mg. recommended by the Food and Nutrition Board. However, human milk comes much nearer to meeting the stated requirement for riboflavin than it does for thiamine. Applying the same type of discussion as was given for thiamine, it would appear that the average breast fed baby probably is adequately supplied with riboflavin.

Both human and cow's milk are poor sources of nicotinic acid or niacin,[21] human milk probably being the poorer of the two as with most other members of the vitamin B complex. It is probable that the amount of niacin in milk, at least human milk, is dependent on the intake of the mother. On the basis that the requirement for niacin is approximately ten times that for thiamine, the niacin requirement of the infant may be from 250 to 400 micrograms for each kilogram. Thus the requirement of the young infant, before niacin con-

14. Morgan, Agnes F., and Haynes, Edna G.: Vitamin B_1 Content of Human Milk as Affected by Ingestion of Thiamine Chloride, J. Nutrition **18:** 105-114 (Aug.) 1939. Slater, E. C., and Rial, E. J.: The Thiamine (Vitamin B_1) in Human Milk, M. J. Australia **1:** 3-12 (Jan. 3) 1942. Widenbauer, F., and Heckler, F.: Ueber den Vitamin B_1-Gehalt der Kuh- und Frauenmilch, Ztschr. f. Kinderh. **60:** 683-690, 1939. Kendall, Norman: Thiamin Content of Various Milks, J. Pediat. **20:** 65-73 (Jan.) 1942. Knott, Kleiger and Bracamonte.[15]

15. Knott, Elizabeth M.; Kleiger, Sarah C., and Bracamonte, F. T.: Factors Affecting the Thiamine Content of Breast Milk, J. Nutrition (Jan.) 1943.

16. Clements, F. W.: The Symptoms of Partial Vitamin B_1 Deficiency in Breast Fed Infants, M. J. Australia **1:** 12-16 (Jan. 3) 1942.

17. Elvehjem, C. A.: Meat and Human Health, J. Am. Dietet. A. **18:** 145-148 (March) 1942; The Water Soluble Vitamins, J. A. M. A., to be published. Boas-Fixsen, Margaret A., and Roscoe, Margaret H.: Tables of the Vitamin Content of Human and Animal Foods, Nutrition Abstrs. & Rev. **7:** 823-867 (April) 1938. Halliday, Nellie, and Dueul, H. J., Jr.: The Presence of Free and Combined Thiamine in Milk, J. Biol. Chem. **140:** 555-561 (Aug.) 1941. Clouse, Ruth C.: Essentials of an Adequate Diet: II. Hygeia **19:** 727-729 (Sept.) 1941. Tech. Bull. 707, U. S. Dept. Agric., December, 1939. Schlutz, F. W., and Knott, Elizabeth M.: Factors Affecting the Vitamin B_1 Content of Evaporated Milk, Proc. Soc. Exper. Biol. & Med. **40:** 532-535 (April) 1939. Slater and Rail.[14] Widenbauer and Heckler.[14]

18. Knott, Elizabeth M.; Kleiger, Sarah C., and Schlutz, F. W.: Is Breast Milk Adequate in Meeting the Thiamine Requirement of Infants? J. Pediat., to be published.

19. Neuweiler, W.: Ueber den Flavingehalt der Frauenmilch, Klin. Wchnschr. **16:** 1348-1350 (Sept. 25) 1937. Müller, Rudolf: Beobachtung über dem Lacto-flavingehalt der Frauenmilch und seine Beeinflussung durch die Ernährung, Klin. Wchnschr. **16:** 807-810 (June 5) 1937.

20. Henry, K. M.; Houston, J., and Kon, S. K.: Estimation of Riboflavin: Part 2. The Estimation of Riboflavin in Milk: Comparison of Fluometric and Biological Tests, Biochem. J. **34:** 607-624 (April) 1940. Johnson, P.; Maynard, L. A., and Loosli, J. K.: The Riboflavin Content of Milk as Influenced by Diet, J. Dairy Sc. **24:** 57-64, 1941. Clouse, Ruth C.: Essentials of an Adequate Diet: III, Hygeia **19:** 817-818 (Oct.) 1941. Elvehjem.[17]

21. Kodicek, E.: Estimation of Nicotinic Acid in Animal Tissues, Blood and Certain Foodstuffs: 2. Applications, Biochem. J. **34:** 724-735 (May) 1940. Teply, L. J.; Strong, F. M., and Elvehjem, C. A.: The Distribution of Nicotinic Acid in Foods, J. Nutrition **23:** 417-423 (April) 1942. Bailey, E. A., Jr.; Dann, W. J.; Satterfield, G. H., and Grinnells, C. D.: A Method for the Estimation of Nicotinic Acid in Milk, J. Dairy Sc. **24:** 1047-1053, 1941. Noll, C. I., and Jensen, O. G.: The Chemical Determination of Nicotinic Acid in Milk, J. Biol. Chem. **140:** 755-762 (Sept.) 1941. Snell, E. E., and Wright, L. D.: A Microbiological Method for the Determination of Nicotinic Acid, ibid. **139:** 675-686 (June) 1941.

taining supplements are commonly given, would be from 1 to 2 mg. daily. If such a requirement is met, it is only barely met by either human milk or formulas of cow's milk. In the present state of our knowledge early supplement with niacin containing foods seems desirable for all infants.

Neither human [22] nor cow's milk [23] supplies an important amount of vitamin D. The various relationships of the components of human milk, including the calcium to phosphorus ratio, are such that calcium and phosphorus are more efficiently utilized from this food than from cow's milk. It is well known that rickets is less common among breast fed than among artificially fed infants. Nevertheless, breast fed babies sometimes develop rickets and the calcium and phosphorus retentions of babies receiving human milk are increased when vitamin D is given. The requirement of the breast fed baby for vitamin D is not known accurately, but probably it is little or no different from that of the artificially fed baby, as discussed subsequently.

In the preceding discussion certain large differences in body composition between breast fed and artificially fed babies have been mentioned. The significance of these differences to the baby is not clear. Our present knowledge does not seem to warrant the selection of one type of composition as preferable to the others. Detailed nutritional studies have not proved any inferiority of human milk as compared to cow's milk in infant feeding despite the facts that certain essential components are present in small amount and that well managed artificial feeding produces a type of body composition that might seem more desirable from certain theoretical points of view. The usual reasons advanced for preference for the feeding of human milk are trite, though largely correct. These reasons pertain to ease of digestion and low bacterial content of the milk, relative freedom of the infant from infection, infrequency of digestive disturbances, production of good growth and physical status, infrequency of serious illness and relative ease of diet regulation. It may be, as so often is stated, that nature intended human milk for the human infant and cow's milk for the more robust stomach and more rapid growth of the calf. However, nature has not informed us so clearly as to when other foods should be added to the diet and what foods should be given. For answers to these questions we must depend on empirical practice as modified from time to time by scientific observation. That certain food components should be added early seems clear.

SUPPLEMENTS TO THE MILK DIET OF THE INFANT

Vitamin C.—Most babies at birth have blood levels of ascorbic acid of at least 0.7 mg. and some 1.0 mg. or more for each hundred cubic centimeters of blood.[24] The blood level decreases promptly and rapidly. By the tenth day the artificially fed baby may be expected to have approximately 0.4 mg. for each hundred cubic centimeters of blood, a prescorbutic level. By the fourth or fifth day the breast fed baby is receiving ascorbic acid in significant amounts, but in the case of the artificially fed baby the custom of delaying vitamin C administration until the second month is altogether too common. Orange juice, the most frequently used source, even though started late, is commonly given in amounts much too small to meet the need. The young artificially fed baby has been found to need approximately 20 mg. of ascorbic acid daily in addition to the small amount in the formula in order to have a blood value for this material comparable to the lower blood levels of breast fed babies. Thus at least an ounce of orange juice is desirable, beginning in the early days of life. By the time the baby is 3 months old the amount of orange juice given could well be two ounces or even more. In the private practice of pediatricians "intolerance" of orange juice is encountered frequently, but in hospital practice this condition is found most rarely; thus, certain inferences are obvious. From the point of view of digestion, orange juice is little more than a 10 per cent solution of dextrose, a material which should not disturb the alimentary tract of the most delicate infant. Perhaps it is not a coincidence that babies who cannot tolerate orange juice also usually have difficulty with tomato juice. For those who are intolerant to these food materials, ascorbic acid is widely available in tablet form.

TABLE 2.—*Approximate Vitamin Content of Human and Cow's Milk*

Values for Each Hundred Grams or Cubic Centimeters

	Total A, I. U.	D, I. U.	C, Mg.	Thiamine, Mg.	Riboflavin, Mg.	Niacin, Mg.
Human milk...	60-500	0.4-10	1.2-10.8	0.002-0.036	0.015-0.08	0.1
Average.....	250		6.4	0.013	0.04	
Cow's milk.....	80-220	0.3-4.4	1.1-2.9	0.018-0.075	0.10-0.26	0.07-0.15
Average raw...	180		2.0	0.045	0.20	0.10
Past.....	No loss	No loss	0.9-1.4	0.030-0.040	No loss	
Evap..... Reconst.....	No loss	No loss	0.6	0.20*-0.030	No loss	

* After several months' storage.

N. B.: Pantothenic acid, cow's milk, average 0.25-0.40 mg. for each hundred cubic centimeters. (Elvehjem.[17] Jukes, T. H.: The Distribution of Pantothenic Acid in Certain Products of Natural Origin, J. Nutrition **21**: 193-199 [Feb.] 1941). Pyridoxine, cow's milk, 0.13-0.20 mg. for each hundred cubic centimeters (Elvehjem.[17] Henderson, LaVell M.; Waisman, H. A., and Elvehjem, C. A., ibid **21**: 589-598 [June] 1941): human milk content approximately the same as that of cow's milk (György, Paul: Quantitative Estimation of Lactoflavin and of Vitamin B_6 in Cow Milk and in Human Milk, Proc. Soc. Exper. Biol. & Med. **35**: 204-207 [Oct.] 1936). Biotin, cow's milk, average 0.001-0.004 mg. for each hundred cubic centimeters (Lampen, J. O.; Bahler, G. P., and Peterson, W. H.: J. Nutrition **23**: 11-21 [Jan.] 1922. Shull, G. M.: Hutchings, B. L. and Peterson, W. H.: A Microbiological Assay for Biotin, J. Biol. Chem. **142**: 913-920 [Feb.] 1942).

Vitamin D.—The need for vitamin D from special sources exists from birth. One good argument favoring the use of milk fortified with vitamin D is that probably no one hesitates to prescribe this type of milk for the earliest formulas, whereas perhaps the majority of physicians wait several weeks or into the second month before prescribing a fish liver oil. Fish liver oils in appropriate amounts may be expected to produce no digestive difficulties at 1 to 2 weeks of age. The condition most to be feared at this early age is lipoid pneumonia produced by aspiration of the oil. It is partly for this reason that some physicians use concentrated preparations of vitamin D in preference to cod liver oil. Other and perhaps preferable alternatives exist. Preparations of both vitamin D_2 and D_3 are commercially available in solutions which are freely miscible with the milk formula and offer the advantage of dispersion of the vitamin, in which state it is more efficiently utilized than in the concentrated form.

The requirement for vitamin D has been set at 400 units daily by the Food and Drug Administration; 400 to 800 units is the daily allowance recommended by the Food and Nutrition Board of the National Research Council; 2 teaspoons of minimum standard cod liver

22. Drummond, G. C.; Gray, C. H., and Richardson, N. E. G.: Antirachitic Value of Human Milk, Brit. M. J. **2**: 757-760 (Oct. 14) 1939.
23. Bechtel, H. E., and Hoppert, C. A.: Seasonal Variation of the Vitamin D in Normal Cow Milk, J. Nutrition **11**: 537-549 (June) 1936.
24. Braestrup, P. W.: The Content of Reduced Ascorbic Acid in Blood Plasma in Infants, Especially at Birth and in the First Days of Life, J. Nutrition **16**: 363-373 (Oct.) 1938. Mindlin, R. L.: The Relation between Plasma Ascorbic Acid Concentration and Diet in the Newborn Infant, J. Pediat. **13**: 309-313 (Sept.) 1938.

oil (approximately 600 units) is the daily dosage suggested by the Council on Pharmacy and Chemistry of the American Medical Association. No acceptable evidence has been found that a normal infant needs more than 350 units daily for optimum or for maximum calcium utilization when the vitamin D is of no greater concentration than exists in cod liver oil.[25] The 2 and 3 teaspoons of cod liver oil commonly prescribed contain as much as 1,800 and 2,700 units respectively when some of the high potency oils are used. Some evidence exists that these larger amounts are detrimental in that appetite decreases after several months of use, with consequent decrease in calcium retention and in growth rate.[26] One teaspoon daily of the less potent of the acceptable cod liver oils or ½ teaspoon of the highly potent oils is adequate. If preparations of such concentration as viosterol must be used, a dosage of 4 or 5 drops is preferable to the 10 drops commonly used. The dosage of vitamin D should be considered in terms of units; volumes should be stated only in interpretation to the caretaker of the infant in relation to the specific product to be used.

Cereals.—It is the almost universal custom in this country to prescribe cereal as the baby's "first solid food." The age at which cereal is given to infants has varied with different generations of physicians, but at the present time the addition of cereal to the diet at 3 months is a common practice. This current practice finds its counterpart in the time of the Roman Empire. Thus it is an empirical custom, its continuance being based on the clinical impression and belief that babies thrive better when receiving cereal. Among the cereal products listed as suitable for infant feeding are farina preparations, foods which presumably add little to the nutritional value of the infant's diet.

Earlier in this review has been mentioned the importance of supplementing the milk diet of the infant with foods containing iron and thiamine and possibly other members of the vitamin B complex. Whole grain cereals and especially fortified proprietary cereal foods contribute importantly to the satisfaction of these needs. Thus an empirical custom receives support from modern scientific evidence, but only when cereal foods are carefully selected.

It is a custom of a few physicians to defer the feeding of cereals until the second half of the first year and to supply the needed iron and B vitamins from egg yolk, vegetables and fruits. When these foods are given in appropriate quantities the supply of iron and B vitamins is somewhat greater than from whole grain cereals, though not greater than from some of the fortified proprietary foods. Thus among the natural foods the known needs of the infant are supplied better from egg yolk, vegetables and fruits than from whole grain cereals. When these foods are given, the feeding of cereal loses much of its importance and may be deferred until the capacity of the infant increases to the extent that the entire group of foods may be taken comfortably.

OTHER SUPPLEMENTARY FOODS

Some of the food values of egg yolk, vegetables and fruits have been mentioned in the preceding section. Egg yolk is frequently given, preferably cooked, at 3 to 4 months of age, sieved vegetables at 4 to 5 months and sieved fruits at 4 to 6 months. The giving of a variety of these foods twice a day instead of the usual cereal twice daily not only supplies needed nutrients but helps to accustom the infant to variety in flavors and textures of foods, a goal highly desirable from the point of view of forming good feeding habits.

THE PSYCHOLOGY OF INFANT FEEDING

The psychologic aspects of infant feeding are fully as important as those more obviously nutritional. One of the commonest complaints relating to children brought to the pediatrician is anorexia, usually dependent on training in feeding habits and usually having its origin in infancy. Often the formula prescription of the physician contributes to the onset of the difficulty. A definite volume of food is prescribed, and the conscientious and solicitous parent endeavors to give this exact quantity of formula at each feeding regardless of possible variations in appetite. In this manner rebellion against food may have its beginning. The desirability of variety in texture and flavor has been mentioned. These variations should be introduced early. The child who has had only liquid and sieved foods throughout the first year frequently refuses coarser foods when they are finally offered. At least some of the fruits and vegetables offered should be chopped or mashed rather than sieved after the sixth or seventh month. The continuance of bottle feeding after 1 year of age is not good feeding practice and is usually evidence that other environmental factors probably are faulty.

THE FEEDING OF CHILDREN

The conclusion is reached easily that the diets of our children have improved in many ways over those used in the past. It is clear also that they have not yet improved sufficiently even in those economic levels at which the cost of food is relatively unimportant.

It is customary to attribute increased rate of growth of a population group to improvement in nutrition. Certainly it has been demonstrated that nutrition definitely affects the rate of growth. Whether the cause is nutritional or dependent on some other factor at present unrecognized, studies have shown that young people of this country are taller and heavier than were the children of former years. For example, Meredith[27] has shown that boys living in the United States today are 6 to 8 per cent taller and 12 to 15 per cent heavier than was the case half a century ago. He found the size of boys to be related to economic status, presumably a nutritional relationship. He found also that differences in size were unimportant when related to geographic distribution within the United States.

Other studies have shown that well fed babies and children grow at rates greater than average. The growth data of Kornfeld[28] (1929) and of Stuart[29] (1934) show a growth rate more rapid than the data of Baldwin[30] (1921). Though these differences are greater among infants, they appear also for the child. The assumption seems justified that the increased growth rates are attributable to improved nutrition.

Several approaches exist to the obtaining of evidence that current diets are not satisfactory. One of these

25. Jeans, P. C., and Stearns, Genevieve: The Human Requirement of Vitamin D, J. A. M. A. **111**: 703-711 (Aug. 20) 1938; in The Vitamins, A Symposium, Chicago, Americal Medical Association, 1939, chapter 26, pp. 483-512.

26. Jeans, P. C., and Stearns, Genevieve: The Effect of Vitamin D on Linear Growth in Infancy: II. The Effect of Intakes above 1,800 U. S. P. Units Daily, J. Pediat. **13**: 730-740 (Nov.) 1938.

27. Meredith, H. V.: Stature and Weight of Children of the United States, Am. J. Dis. Child. **62**: 909-932 (Nov.) 1941.

28. Kornfeld, Werner: Zur Bewertung von Grösse und Gewicht bei Knaben und Mädchen aller Altestufen, Ztschr. f. Kinderh. **48**: 188, 1929.

29. Stuart, H. C.: Standards of Physical Development for Reference in Clinical Appraisement: Suggestions for Their Presentation and Use, J. Pediat. **5**: 194-207 (Aug.) 1934.

30. Baldwin, B. T.: The Physical Growth of Children from Birth to Maturity, University of Iowa Studies, University of Iowa, Iowa City, 1921, vol. 1, no. 1.

is to point out the frequency of dental caries and the dependence of tooth decay on faulty diet. This field of observation is highly controversial in some respects, but numerous investigators have presented evidence of interrelationship between caries and dietary content. A critical review of the evidence would be too involved and lengthy to permit inclusion here. Various investigators have emphasized the importance in the diet of sugar, calcium, vitamin D, ascorbic acid, fluorine, refined foods and the adequacy of the diet as a whole.[31] Nearly all investigators in the field will agree to the importance of one or more items of this list in relation to dental caries. All the items relate to nutrition or at least to diet content. Another approach to the determination of the adequacy of the diets of the population is by means of surveys. Such surveys indicate widespread dietary faults which undoubtedly affect nutrition according to the degree of fault. Estimates of the prevalence of nutritional deficiency have been published recently.[32]

One nutritional essential commonly deficient in the child's diet is vitamin D. Many children receive an inadequate amount from sunshine in summer and few receive a sufficient amount in winter. While giving vitamin D preparations has become routine in infancy, relatively few mothers realize that this material is important throughout the growth period. Without vitamin D, children vary widely in their ability to utilize calcium and phosphorus; for some the utilization is excellent, for others poor. Since the distinction between these two types of children cannot be made without prolonged and detailed special study for each child, it is appropriate to consider that all children require vitamin D. When the calcium and phosphorus intakes are adequate and appropriate, from 300 to 400 units of vitamin D daily will produce retentions of these minerals ample to satisfy the theoretical requirements for normal growth.[25]

Except for special therapeutic purposes, probably no need exists for special preparations of vitamin A to be given in addition to that present in the diet. Evidence is conflicting concerning the frequency of vitamin A deficiency among the children of this country. Certainly vitamin A is relatively abundant in many of our foods, and any reasonably good diet contains ample not only to meet the minimum requirement but for storage. It is clear also that if the diet is fortuitously deficient in vitamin A it is deficient also in many other essentials and that much more is needed than addition of vitamin A alone. It is believed that in a high proportion of instances in which children are found to have clinical evidence of vitamin A deficiency the deficiency is dependent on defects of utilization in greater measure than on dietary deficiency.[33] Infections and illnesses produce prompt response in impairment of utilization. In the continued presence of illness large therapeutic doses of vitamin A may be required to supply the need or these large doses may fail to produce a noticeable effect.

Dark adaptation tests have a definite field of usefulness in determining vitamin A status, though this issue has been clouded greatly by misinterpretation. In dysadaptation from utilization deficiency dependent on illness, subsequent improvement has been attributed to increased proficiency produced by practice in the test because no extra vitamin A had been given. Failures to correlate the test results with dietary intake of vitamin A have been used to condemn the tests when all subjects had adequate intakes and gave test results within the normal range. Uncritical reading of such reports has led to confusion in acceptance of the validity of the tests. That dark adaptation tests have found acceptance in authoritative groups is attested by the fact that the vitamin A standards set up by the Food and Drug Administration and by the Food and Nutrition Board of the National Research Council were based chiefly on the results of adaptation tests.

Much circumstantial evidence exists in recent literature to the effect that thiamine probably is obtained by many children in amounts less than those considered appropriate or optimum.[34] It is clear that the remedy for this situation, to the extent that it exists, lies in a better selection of dietary components rather than in the giving of special preparations of thiamine. In general, refined cereal preparations are to be avoided except as they have been "enriched." The lower the economic level, the greater the extent to which the energy need usually is supplied by refined cereal products and sugar, sometimes amounting to 50 per cent or more of the total energy intake. Enriched bread and flour have now become available at all economic levels. Much ado has been made over the increasing consumption of refined sugar, some believing that sugar is harmful per se, but all agreeing that it is too likely to replace foods nutritionally valuable. It is refreshing to find another point of view as presented by Macy.[35] It has been her observation that, the better the diet from the nutritional point of view, the less the desire of the child for sugar. She has concluded that the amount of sugar taken voluntarily by a child is an excellent criterion of the adequacy of the diet. As the diet is improved, the voluntary ingestion of sugar decreases. If this observation is correct, the point of attack is not to restrict sugar but to improve the diet by increasing the amounts of nutritionally valuable foods offered.

Thiamine is reputed for its effect on the appetite. An important proportion of the children for whom parents seek medical advice are brought to the physician because of anorexia. In few of these instances is the anorexia correctible by thiamine medication. Though the child may be receiving suboptimal amounts of thiamine and other essentials, the fundamental difficulty lies in the environment and training in feeding habits, these bad habits often having had their origin early in infancy. The correction of these habits has little relationship to thiamine.

Vitamins other than those mentioned need little special discussion. A child who ingests his expected

31. Advisory Committee on Research in Dental Caries: Findings and Conclusions on Its Causes and Control, Compiled for the Research Commission of the American Dental Association, Lancaster, Lancaster Press, 1939.

32. Jolliffe, Norman; McLester, J. S., and Sherman, H. C.: The Prevalence of Malnutrition, J. A. M. A. **118:** 944-950 (March 21) 1942. Jolliffe, Norman: Nutritional Failures: Their Causes and Prevention, Milbank Memorial Fund Quarterly **20:** 103-125 (April) 1942.

33. Jeans, P. C.; Blanchard, Evelyn L., and Satterthwaite, F. E.: Dark Adaptation and Vitamin A, J. Pediat. **18:** 170-194 (Feb.) 1941.

34. Wilson, H. E. C.: Pyruvic Acid Test for Thiamine Deficiency in Children, Lancet **1:** 199 (Feb. 14) 1942. Mason, H. L., and Williams, R. D.: The Urinary Excretion of Thiamine as an Index of the Nutritional Level: Assessment of the Value of a Test Dose, J. Clin. Investigation **21:** 247-255 (March) 1942. Wortis, Herman; Goodhart, R. S., and Bueding, Ernest: Cocarboxylase, Pyruvic Acid and Bisulfite Binding Substances in Children, Am. J. Dis. Child. **61:** 226-230 (Feb.) 1941. Schlutz, F. W., and Knott, Elizabeth M.: Cocarboxylase Content of Blood of Infants and of Children, ibid. **61:** 231-236 (Feb.) 1941. Melnick, Daniel: Vitamin B_1 (Thiamine) Requirement of Man, J. Nutrition **24:** 139-151 (Aug.) 1942. Lane, R. L.; Johnson, Elizabeth, and Williams, R. R.: Studies of the Average American Diet I; Thiamine Content, ibid. **23:** 613-624 (June) 1942.

35. Macy, Icie G.: Nutrition and Chemical Growth in Childhood, vol. I, Evaluation, Springfield, Ill., Charles C Thomas, 1942, pp. 84-85.

allowance of milk receives from this source alone most, if not all, of the riboflavin required. For the child who does not receive his quota of milk, the possibility of deficiency not only of riboflavin, but of other essentials as well, is to be considered, and the diet must be supplemented accordingly in a special and expert manner if it is to be complete. Meat, particularly the glandular organs and lean pork, is a good source of the B group of vitamins. If ingested regularly, it is a better source of thiamine and niacin than is milk; though it is a fairly good source of riboflavin, it is inferior to milk in this respect. Eggs contribute importantly to the supply of B vitamins as well as other nutritional essentials and should be included in the diet frequently, preferably daily.

Calcium is the mineral requiring chief attention in childhood, since the other essential minerals are more likely to be present in sufficient amount in most diets. Milk and milk products are our best food source of calcium. In the case of the young child the usual diet, exclusive of milk, contains approximately 0.2 Gm. of calcium; the diet of the older child contains approximately 0.3 Gm. The remainder of the requirement of 1 to 1.5 Gm. is normally supplied by milk. Thus with propriety one may speak of the milk requirement in relationship to the calcium need.

A curve of theoretical requirement for retention of calcium may be constructed by apportioning according to rates of growth at different ages the total accretion of calcium from birth to maturity. When such a curve is constructed, the daily retention requirement is found to decrease from approximately 300 mg. in infancy to a low point of about 180 mg. early in the preschool period, then to increase to about 450 mg. at the beginning of adolescence.[36] The efficiency of children in calcium utilization varies widely, but, when vitamin D is given, the range of retention is not great, though always the amount ingested exceeds greatly the amount retained. Discussing the calcium requirement in terms of milk, it has been found that during the early part of the preschool period 1 pint of milk in addition to the usual diet permits retentions adequate to meet the theoretical retention requirement, which is low at this age.[37] Very quickly after this time and up to approximately 10 years of age the retention requirement is not met until the quantity of milk is increased to 1½ pints daily. The requirement during adolescence is not known with the same degree of definiteness but probably is the calcium content of 1 quart of milk daily. It seems unwise to place any emphasis on the low requirement in the early preschool period. This period is brief. More is received by the baby immediately preceding this period and more is required subsequently. Milk should not be considered solely as a source of calcium. It contributes most importantly to the protein requirement as well as other essentials. Consequently it seems preferable to advise at least 1½ pints of milk after the period of infancy and up to the age of 10 years. The taking of a full quart of milk throughout this period can be considered as beneficial only provided the larger quantity does not crowd from the diet other essential foods. The fear or belief that the larger quantity may have this effect is widely prevalent but not too well founded, especially for those children who have normal appetites.

Calcium deficiency, at least in moderate degree, is believed to be widely prevalent in childhood. To whatever degree such a situation exists, it is usually much worse during adolescence. At this age period the requirement is increased and too often the intake not only is not increased but actually is decreased, sometimes because of a desire, especially in girls, to remain slim. It is during the adolescent period particularly that dental caries tends to become rampant, a condition believed by many observers to depend on nutrition and by some observers to depend in part on calcium metabolism.

The custom of prescribing or using calcium salts is widely prevalent. Such salts have a definite field of usefulness under special circumstances, but they have no rightful place in the normal diet. When they are used, they should be carefully chosen for the purpose intended and the dosage should be more nearly adequate than it frequently is. The phosphates of calcium are as well utilized as the same salts in milk. The calcium needs for growth can be satisfied easily by means of these preparations. In order that calcium may be usable for growth, it is necessary that a proportionate amount of phosphorus be available at the same time. The calcium of such salts as calcium lactate and gluconate is utilizable for retention only to the extent that phosphorus is present otherwise in the diet. All diets contain at least a fair amount of phosphorus, but the amount usually is not adequate to permit the best use of the calcium of these salts. The chief objection to the customary use of calcium salts is that they are not food in the usual sense and they are often used as a substitute for milk. It is obvious that calcium salts can be a substitute for milk in only a most restricted sense and that the diet must be supplemented in many additional ways in order to compensate for the absence of milk.

The possibility of protein deficiency in the diets of children has received some, but insufficient, attention. One of the criteria which may be used for estimating the protein content of the body is the creatinine output in the urine. Creatinine excretion is directly proportional to the amount of muscle in the body.[38] When children are fed ample protein, the creatinine excretion (consequently the amount of muscle) rises to a constant level for each child, with a narrow range at each age period for a group of children.[39] When these values are plotted according to age and in terms of creatinine for each kilogram of body weight, a curve is obtained which may be considered as representing normal conditions as regards creatinine output and muscle mass. Creatinine data collected from the literature, as well as data from this clinic, show that the great majority of children studied have creatinine values below, often considerably below, the theoretically normal curve when they first come under observation. Those with normal values are the exception rather than the rule. In all the instances in which observations have been made the creatinine output increases promptly to the normal level when amounts of protein are fed which are consistent with what are considered standard dietary allowances. It appears that when children receive suboptimum amounts of protein they approach as nearly to the

36. Jeans, P. C., and Stearns, Genevieve: Unpublished data.
37. Daniels, Amy L.; Hutton, Mary K.; Knott, Elizabeth M.; Everson, Gladys, and Wright, Olive E.: Relation of Ingestion of Milk to Calcium Metabolism in Children, Am. J. Dis. Child. **47**: 499-513 (March) 1934. Daniels, Amy L.; Hutton, Mary K.; Knott, Elizabeth M.; Wright, Olive E., and Forman, Mary: Calcium and Phosphorus Needs of Preschool Children, J. Nutrition **10**: 373-388 (Oct.) 1935. Outhouse, Julia; Kinsman, Gladys; Sheldon, Dorothy; Twomey, Irene; Smith, Janice, and Mitchell, H. H.: The Calcium Requirements of Five Preschool Girls, ibid. **17**: 199-209 (March) 1939.

38. Hunter, Andrew: Creatine and Creatinine, London, New York, Longmans Green & Co., Ltd., 1928.
39. Stearns, Genevieve, and others: Unpublished data.

normal creatinine excretion as their protein intakes permit them. It is of interest also that the weight of the child may be, and in fact usually is, within what is considered the normal range when the low creatinine values are observed. The size or weight of the body is not a criterion for judging protein metabolism.

In meeting the protein requirement, emphasis is to be placed on the value of milk. A quart of milk daily supplies most of the protein need of the young child and half the need at the beginning of adolescence. Such a quantity of milk contributes more protein to the diet than any other single food. When milk is excluded from the diet, the protein requirement of the child can be met only if special and expert supervision is given.

SUMMARY

Despite all our modern knowledge of infant nutrition and all the current refinements of artificial feeding, feeding at the breast of the mother remains an ideal procedure. This is true despite the fact that human milk contains only a bare minimum of most of the nutritional essentials and the fact that the body composition of the breast fed infant departs widely from that which preceded and that which follows, in contrast to the body composition of the artificially fed baby, which maintains more closely a smooth continuance of the fetal and postinfancy curve.

Vitamin D is needed early by all babies, whether breast or artificially fed. Vitamin C is needed early by artificially fed babies and is a harmless safeguard for the breast fed baby. No need for vitamin A from special sources exists. If current custom is in error, it errs in the direction of giving too much vitamin D and too little vitamin C and in not giving either of these materials early enough.

Additional supplementary foods should be given at not later than 4 months of age to both breast and artificially fed babies. One important function of these supplements is to supply iron and vitamins of the B group. Another function is to accustom the baby early to variety in flavor and texture for the promotion of good feeding habits. Anorexia and poor feeding habits, which occur so frequently in older children, often have their origin in feeding mismanagement in infancy.

In a general way we have done reasonably well nutritionally by our babies, but not so well for children past infancy. The nutrition of the child has been improved during the past generation, but not to the extent desirable or possible with present knowledge. Though observers do not agree too well as to the particular nutritional or dietary factors responsible for dental caries, nearly all are of the opinion that one or more dietary components may be responsible, either by lack of those which are essential or by the presence of some considered harmful. On such a basis, dental caries is our most widespread nutritional scourge.

At least three nutritional essentials deserve special emphasis in childhood, viz. vitamin D, protein and calcium. Vitamin D is required throughout the growth period, a fact extensively overlooked. Milk as our only constant good food source of calcium is not taken in sufficient quantity by a large number of children. Protein deficiency is much more common than is generally realized. A diet adequate in protein cannot be arranged fortuitously without the inclusion of milk.

Though thiamine is obtained by a large proportion of children in quantities scarcely meeting their needs, the remedy lies in better food selection, not in thiamine medication. Enrichment of flour and bread and decreased consumption of sugar should contribute materially to the desired end.

Vitamin A from special sources is not needed by the normal child. A diet fortuitously deficient in vitamin A is deficient also in other respects. The remedy is a better diet, not medication.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

AUSTIN E. SMITH, M.D., Acting Secretary.

STANDARDIZATION OF ESTROGENS

The therapeutic standardization of estrogens has until recently been quite unsatisfactory. The main factor contributing to confusion and lack of uniformity has been the dependence on bioassay of the various estrogens in laboratory animals. It has been pointed out repeatedly that animals, even of the same strain, react differently to equal amounts of estrogens, and comparisons of potencies of estrogens vary tremendously in the hands of different investigators. In the chapter "Commercial Status of Endocrine Preparations" of Glandular Physiology and Therapy an appeal was made that estrogens be assayed directly in the human being in order to standardize properly therapeutic applications of the substance and that such assays be made on the basis of weight of estrogens rather than biologic units.

Increasing numbers of crystalline estrogens are being marketed or prepared in weighed amounts. Noncrystalline preparations, of course, require biologic assay, but these should be performed in parallel with weighed amounts of crystalline estrogens of the same type. It now appears, however, that even weighed amounts of estrogens may not be an accurate index of comparison. These instances would apply to various modifications of the estrogens, such as the ethers, esters or other combinations of inert substances with the active estrogens for the purpose of increasing the estrogenic efficiency. There are already on the market a number of esters of various estrogens, such as estradiol benzoate, estradiol dipropionate and diethylstilbestrol dipropionate. Experimentally a number of other compounds have been made available, such as monomethylether of diethylstilbestrol, diethylstilbestrol dipalmitate and dibenzoate. A recent report by S. C. Freed, W. M. Eisin and J. P. Greenhill: The Therapeutic Efficiency of Diethylstilbestrol Esters (THE JOURNAL, Aug. 22, 1942, p. 1412) suggested that the higher fatty acid esters of diethylstilbestrol are more efficient and desirable than the lower fatty acid esters; it is quite possible that in time other estrogens, either natural or synthetic, as well as other hormonal substances may be combined with high fatty acids. Under these conditions the simple labeling of such preparations by weight does not give a true index of the activity of the preparations, since the active component of the compounds will have varying concentrations, depending of course on the size of the inert molecule. Thus, while 1 mg. of diethylstilbestrol dipropionate may contain approximately 0.6 mg. of diethylstilbestrol, 1.0 mg. of diethylstilbestrol dipalmitate will contain approximately 0.4 mg. of the active component because of the greater weight of palmitic acid. Similar examples may be obtained with other compounds.

Because of the inadequacy of the current commonly accepted animal biologic assays, it will be necessary eventually to assay the compounds for therapeutic standardization by testing in the human being no matter how the preparations are standardized by weight. The factors involved in therapeutic standardization should be reduced to a minimum; in order to do this it appears advisable to label such preparations in terms of weight of the active components. In anticipation of this procedure the Council considers it advisable at this time, before the numerous compounds become available commercially, to propose standardization of these substances on the basis of the amount of active component.

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SATURDAY, NOVEMBER 21, 1942

THE PEPPER HEARINGS ON MEDICAL MANPOWER

Immediately following the editorials in this issue of The Journal appears the report of the hearings before the Pepper Subcommittee on Education and Labor dealing with medical manpower. A preliminary editorial on the subject was published in The Journal last week. Almost simultaneously with these hearings appeared an editorial in the New York *Times*, a public statement by Michael M. Davis, a press release by the so-called New York Physicians Forum, a group of some one hundred and thirty physicians in New York City. This group includes among its leaders Drs. Ernst P. Boas and Miles Atkinson. Physicians will remember the recent appearance of these two physicians on a forum held in Washington and their insistence on a revolution in the nature of medical practice. Even before the United States entered the war, the prediction was made by many physicians that attempts would occur to utilize the emergency as an excuse for radical changes in the administration of medical services in this country.

In the report of the hearings which follows, attention is called particularly to certain highlights which merit special consideration. Dr. Frank H. Lahey placed before the committee the present status of the Procurement and Assignment Service and indicated some of the difficulties involved in the work which it is conducting. Senator Hill was exceedingly courteous to Dr. Lahey, although somewhat later in the hearings Senator Pepper intimated that Dr. Lahey is merely an automaton or marionette functioning at the behest of the Army and Navy. This will no doubt surprise Dr. Lahey.

Dr. Thomas Parran attempted to state the exact situation as he observed it. Both the Senator and his economist advisers seemed to be much annoyed that Dr. Parran did not adopt the words which they endeavored to put into his mouth.

Paul de Kruif, Ph.D. in bacteriology, indicated that he had not made any personal investigation of the Procurement and Assignment Service or of its work and that he was speaking largely from hearsay. He did draw into the situation the case of Dr. Tom Spies. Immediately following the publicity accorded to this incident, the editor of The Journal called Dr. Spies on the telephone. According to what Dr. Spies reported, it was the belief of a friend and preceptor that Dr. Spies should be in military service; apparently this friend asked de Kruif to speak to Dr. Spies on the subject. This was the widely publicized incident which de Kruif characterized by saying that the American Medical Association had "put the finger" on Dr. Spies. The evidence indicates that de Kruif is dissatisfied with the American Medical Association or those whom he characterizes as its leaders, although the specific cause of his annoyance is not made clear.

Mr. Henry J. Kaiser and the director of his medical services, Dr. Sidney Garfield, claim to have had some difficulties with the local representatives of the Procurement and Assignment Service because of their desire to hold in their permanent organization young physicians who have been marked "available" by the Procurement and Assignment Service.

Senator Pepper did not permit the editor of The Journal to make any formal statement. The hearing was conducted wholly by the question and answer technic. This procedure Senator Pepper followed frequently with all who appeared, so that much of the hearing is devoted to long statements by Senator Pepper with the answer "Yes, sir" and "Certainly, sir" from those who were supporting the cause in which the hearings were held. The editor of The Journal apparently found it difficult to say "Yes, sir"; it will be observed that he frequently said "No, sir."

Dr. E. J. O'Brien of Detroit, by his own statement hastily summoned to appear, on the suggestion of de Kruif, participated in the tuberculosis campaign in Detroit. Most amazing in his testimony is his statement that he would not oppose a totalitarian government if it could eliminate tuberculosis.

Mr. Michael M. Davis, Ph.D. presumably in economics, spoke as was expected.

It will be interesting to see what kind of report the Subcommittee on Education and Labor makes to its full committee. There is apparently an effort on the part of this senatorial group to set up an independent agency for the control of all manpower, with Mr. Henry Wallace, vice president of the United States, as its head. Presumably they would take authority from the Selective Service System and from the present War Manpower Commission as now constituted and make all agencies subservient to what Senator Pepper calls an "over-all" committee.

THE RENAL PRESSOR SYSTEM

The part played by humoral agents in the genesis of experimental renal hypertension is of profound interest to investigator and clinician. The cycle starts with renin, a heat labile protein present in normal kidneys the existence and properties of which were first described in 1898. Interest in renin revived with Goldblatt's experimental production of renal hypertension. In attempting its purification from the other proteins of the renal cortex, workers in Indianapolis [1] found that the fractions, as they were successively purified, had less and, finally, no vasoconstrictor action on the blood vessels of isolated organs (dog's tail, rabbit's ear) perfused with isotonic solution of three chlorides, although they became more and more effective as pressor agents when injected intravenously into intact animals. The paradox was solved by the observation that addition of blood or plasma or of a protein fraction from plasma to renin as it perfused isolated vessels resulted in prompt vasoconstriction. It was concluded that renin was not in itself vasoactive but that it became active only when in contact with a substance present in plasma which, pending its identification, was tentatively called renin activator.

At about the same time workers in Buenos Aires demonstrated the presence of a pressor and vasoconstrictor substance in the renal venous blood of dogs during experimental renal hypertension. They found a substance with similar characteristics in the renal venous effluent of dogs whose kidneys had been rendered acutely ischemic.[2] They had gone on to the preparation of extracts of such blood and established in it the presence of a heat stable pressor material, evidently not renin, which they termed hypertensine.[3] They also came to the conclusion that renin was of itself vasoinactive but that it acted on plasma to liberate this vasoconstrictor.

Meanwhile in this country further studies on the interaction of renin and renin activator had established the enzymatic character of the reaction of the two proteins and formation of a heat stable pressor and vasoconstrictor in the reaction which was called angiotonin.[4] The preparation and general properties of angiotonin and its probable participation in renal hypertension and the general characteristics of hypertensine were, it appears, reported respectively in Chicago and Buenos Aires within the same twenty-four or forty-eight hour period in November 1939. Since the properties of the substances seemed quite similar, it appeared that workers separated by thousands of miles and by altogether different points of attack had reached simultaneously much the same conclusions.

The interaction was further studied in both countries.[5] In Argentina investigators concluded that renin acted as an enzyme on a protein substrate, called by them hypertensinogen and equivalent to renin activator. Since, however, neither renin nor its proposed substrate was available in pure form, conclusive evidence on this point did not appear. The indications of such activity are evident from the data of both groups. Page and his co-workers therefore provisionally retained the name renin activator in spite of a tendency in biology to restrict the term "activator" to a subsidiary catalyst of enzymatic action.

In the original description of the action of renal extracts containing renin on renin activator, it was shown not only that such extracts caused liberation of angiotonin but that they went on to destroy it.[4] The conclusion that this destruction or inactivation was due to renin itself [6] was revised, as it was shown both in Argentina [7] and in the United States that normal kidneys as well as other tissues contain a substance or substances capable of destroying or inactivating the pressor agent (angiotonin, hypertensine). This effect of tissue extracts was attributed in Argentina to a specific enzyme system, termed hypertensinase, although, lacking full purification of either proposed enzyme or substrate, the evidence was incomplete.

The Indianapolis workers,[8] cooperatively with Harrison, Grollman and Williams,[9] had meanwhile described the preparation of renal extracts which, injected into experimentally hypertensive animals or into human beings suffering from essential or malignant hypertension, result in decreased arterial and objective amelioration of many of the subjective and objective manifestations of the disease. They have since brought

GRADUATE TRAINING OFFERED

The Council on Medical Education and Hospitals of the American Medical Association is anxious to be of assistance to physicians who, because of the war emergency, desire additional training or postgraduate courses as a preparation for the assumption of new or added responsibilities in civilian practice.

Any physicians desiring assistance in connection with such programs are invited to communicate with the Secretary of the Council.

1. Kohlstaedt, K. G.; Helmer, O. M., and Page, I. H.: Proc. Soc. Exper. Biol. & Med. **39:** 214 (Oct.) 1938.
2. Braun Menendez, E., and Fasciolo, J. C.: Rev. Soc. argent. de biol. **15:** 401 (Nov.) 1939.
3. Braun Menendez, E.; Fasciolo, J. C.; Leloir, L. F., and Muñoz, J. M.: Rev. Soc. argent. de biol. **15:** 420 (Nov.) 1939.
4. Page, I. H., and Helmer, O. M.: Cent. Soc. Clin. Res. **12:** 17 (Nov.) 1939; J. Exper. Med. **71:** 29 (Jan.) 1940.
5. Page, I. H.: J. Exper. Med. **70:** 421 (Nov.) 1939. Braun Menendez, Fasciolo, Leloir and Muñoz.[6]
6. Braun Menendez, E.; Fasciolo, J. C.; Leloir, L. F., and Muñoz, J. M.: J. Gen. Physiol. **98:** 283 (July) 1940. Page and Helmer.[4]
7. Leloir, L. F.; Muñoz, J. M.; Braun Menendez, E., and Fasciolo, J. C.: Rev. Soc. argent. de biol. **16:** 75 (May) 1940. Braun Menendez, Fasciolo, Leloir and Muñoz.[6]
8. Page, I. H.; Helmer, O. M.; Kohlstaedt, K. G.; Fouts, P. J.; Kempf, G. F., and Corcoran, A. C.: Proc. Soc. Exper. Biol. & Med. **43:** 722 (April) 1940.
9. Harrison, T. R.; Grollman, Arthur, and Williams, J. R., Jr.: Am. J. Physiol. **128:** 716 (March) 1940.

forward further evidence on this point.[10] While reserving final judgment on the nature of the action of these extracts in vivo, they have tentatively proposed the view that it may be ascribed to the antiangiotonin (hypertensinase, angiotonin inhibitor) activity of the extracts as demonstrated in vitro. Wide variations in the severity of hypertension in both experimental and clinical subjects and varying impurities of the extracts have to the present prevented complete correlation of antipressor and antiangiotonin effects.

There is thus presented a cycle of entirely independent work leading from different logical approaches to much the same visualization of the role of the kidney as an endocrine organ. The differences in conclusions and points of view of the two groups are largely those of terminology and not of precedence. The terminology of Houssay and his co-workers,[11] in which renin the enzyme acts on hypertensinogen the substrate to liberate hypertensine the vasoconstrictor, which may be destroyed by hypertensinase, has a clarifying unity which, in a sense, is lacking to the parallel succession of renin, renin activator, angiotonin and angiotonin inhibitor. If the Argentine terminology is to be criticized, it is largely on grounds, familiar to North American practice, that the term hypertensine implies a participation in hypertension and an effectiveness in hypotension for which little evidence has been advanced, a petitio principii not involved in the term angiotonin. Similarly, lack of knowledge as to the chemical nature of the renin substrate[12] (hypertensinogen, renin activator) as well as of the identity or even the unity of the pressor destroying material (angiotonin inhibitor, hypertensinase) suggests the need of care lest a descriptive but necessarily tentative nomenclature become arbitrarily fixed, and concepts as yet incompletely established become too readily accepted as the equivalent of thoroughgoing demonstration. Since even the renin substrate (renin activator, hypertensinogen) now appears to be formed in the liver,[13] it may be that even the term "renal pressor system" must eventually give way.

Whatever the ultimate significance of the renal pressor system in the genesis of clinical hypertension, such similarity in conclusions as has been reached by the groups in Argentina and in North America makes their paralleling evidence more satisfying than it could otherwise have been.

10. Page, I. H.; Helmer, O. M.; Kohlstaedt, K. G.; Fouts, P. J., and Kempf, G. F.: J. Exper. Med. **73:** 7 (Jan.) 1941.

11. Houssay, B. A., and Braun-Menendez, E.: Brit. M. J. **2:** 179 (Aug. 15) 1942.

12. Since this editorial was prepared, Plentl and Page (Central Soc. Clin. Res. **15:** 32 [Nov. 7] 1942) have identified electrophoretically renin substrate (renin activator, hypertensinogen, prehypertensin) with the α_2 globulin fraction of plasma protein. The name of the chemical entity α_2 globulin might well therefore replace the varied descriptive terms previously used.

13. Page, I. H.; McSwain, Barton; Knapp, G. M., and Andrus, W. D.: Am. J. Physiol. **135:** 214 (Dec.) 1941.

IMMUNITY TO TRICHINOSIS

The fact that micro-organisms may undergo an antigenic mutation during the course of natural infections was first conclusively demonstrated with the spirochetes of relapsing fever. Aristowsky and Wainstein,[1] for example, showed that vaccination of human beings with heat killed initial phase Borrelia recurrentis protects against subsequent experimental inoculations with the same initial phase of the living organism but does not confer immunity against inoculation with the first recurrent phase of the same infectious agent. Furthermore, these Soviet investigators showed that each relapse during the natural course of relapsing fever is of a new and generally different biochemical specificity. In some instances, however, a relapse may be a reversion to a previous antigenic type. Indeed, similar antigenic mutations have been suspected though not yet proved for the tubercle bacillus.[2]

The theoretical basis for antigenic mutations has been studied in greatest detail in connection with the "dissociation" of the pneumococcus. As long ago as 1931 Dawson and Sia[3] for example showed that under certain test tube conditions type pneumococci may lose their power of synthesizing their original type specific capsular polysaccharide and may acquire or develop their latent power to synthesize capsular polysaccharides of a wholly new type.

This dual nature or double antigenic phase also has been demonstrated by Oliver-González[4] for Trichinella spiralis by in vitro tests employing immune serum obtained from rats, guinea pigs or rabbits given larval feedings and mixing with 1 drop of saline worm suspension on a hollow ground slide. The slide was then covered with a sterile cover slip and sealed with petrolatum. After one hour's incubation a fine granular precipitate appeared in the mixture, with coarser and thicker semigelatinous precipitate forming around the anterior end of the worms. During the first twenty-four hours the larvae were able to release themselves from this oral precipitate, but thereafter they became less active and the gelatinous oral precipitate remained attached to them and increased in size. The serum of rabbits artificially immunized by intravenous injections of saline suspensions of powdered larvae had a similar or even more definite in vitro action on trichina larvae but little or no effect on adult worms. These observations seem to indicate that there are antibodies in the serum of naturally hyperimmune animals not formed in rabbits artificially immunized with larval material. The apparent explanation is that the larval and adult forms of Trichinella spiralis are of different immuno-

1. Aristowsky, W. M., and Wainstein, A. B.: Ztschr. f. Immunitätsforsch. u. exper. Therap. **61:** 296, 1929.

2. Thomas, R. M.: J. Exper. Med. **56:** 185 (Aug.) 1932.

3. Dawson, M. H., and Sia, R. H. P.: J. Exper. Med. **54:** 681 (Nov.) 1931.

4. Oliver-González, José: J. Infect. Dis. **67:** 292 (Nov.-Dec.) 1940; **69:** 254 (Nov.-Dec.) 1941.

chemical specificities. "Hyperimmune" serums, however, contain both antilarval and antiadult antibodies. This explanation has been confirmed by fractional adsorption of "hyperimmune" serum with dried larval material, after which procedure the serum possesses only antiadult immune properties.

The stimulation of two different types of specific antibodies by Trichinella spiralis may be considered established. The chemical nature of the dual antigens, however, has not yet been clarified nor have parallel tests of skin sensitivity thus far been made. These are among the pressing problems awaiting further investigation.

Current Comment

MEDICAL LICENSURE FOR "DISLOCATED" PHYSICIANS

Some thousands of physicians have already indicated to the Procurement and Assignment Service for Physicians, Dentists and Veterinarians their willingness to be "dislocated" for the duration of the emergency to meet the needs of the civilian population in some areas from which physicians have gone to join the armed forces. When the proposal was made to accelerate medical education in order to aid the provision of additional physicians at the earliest possible time, the Federation of State Licensing Boards, utilizing the Bureau of Legal Medicine of the American Medical Association, made a survey of the laws regulating the licensing of physicians in various states, with a view to adopting at the earliest possible moment means for modification of regulations or of laws to meet the speeded process of education. If a physician is to be "dislocated" from one area to another in the same state, there will not be any difficulty in licensure. If, however, a physician is to remove to another state in which he has not been licensed, there may be difficulties with securing for him the right to practice. Clearly the processes of licensure must be geared to meet this emergency. No doubt much can be done administratively to meet the situation. The granting of temporary permits to practice for the period of the emergency and perhaps for a brief time thereafter has been suggested as one means of meeting the problem. Already a bill authorizing the issuance of such permits for the District of Columbia is pending in the Congress. In one state, New Hampshire, an amendment was enacted fifteen years ago to the section of the medical practice act prescribing qualifications to be possessed by applicants and authorizing the board of examiners to suspend the requirements in whole or in part in case of war or other threatened or existing national calamity. In this period of war, powers rest in the hands of government leaders the exact limits of which are not fully determined. It has been reported that the Attorney General of the United States has ventured the opinion that licensure laws might be invalidated for the period of the emergency. The suggestion has also been made that state legislatures might immediately pass enabling legislation for such invalidation if necessary to permit physicians to practice temporarily in such states. The legislatures of forty-four states will meet next year so that the necessity of additional legislation might well be considered at this time. Consideration might be given also to the possibility of eliminating fees for reciprocity in the case of a physician who offers himself for "dislocation" during the emergency. In many states the boards may now grant temporary permits to practice previous to the time of the next available examination. If temporary permits are to be issued, the state boards of registration and licensure will need to establish safeguards to prevent the process from becoming the medium by which standards of medical licensure and practice may be depreciated. As is apparent from the hearings on medical manpower before the Pepper committee, some agencies are not adverse to promoting a revolution in the control of medical practice on the basis of shortages of physicians existing in various portions of the country. Already several efforts have been attempted to break down the standards of medical education and medical care and to bring into the practice of medicine half-educated physicians and incompetent cultists. The Federation of State Medical Licensing Boards should realize that there rests on them at this time a great responsibility. The present requirements on licensure should not be permitted to interfere with the supplying of essential scientific medical care to the civilian population in this period of emergency. Neither should there be tolerated any attempt to break down the high standards of medical education and practice achieved by a continuous struggle of more than thirty-five years.

RADIO BROADCASTS: "DOCTORS AT WAR"

On page 972 of this issue appears an announcement of a new series of radio broadcasts by the American Medical Association and the National Broadcasting Company in cooperation with the medical departments of the United States Army and the United States Navy. The series will be entitled "Doctors at War" and will constitute book III of the highly successful "Doctors at Work" broadcasts inaugurated two years ago. This will be the eighth series of dramatized network broadcasts by the American Medical Association and the National Broadcasting Company. The broadcasts will be devoted to three principal purposes: portrayal of the medical care and supervision of the armed forces and the part which doctors play in this important feature of military training and service, interpretation of the medical aspects of maintaining industrial health and production for war, and explanation of important civilian health problems, especially with relation to judicious use of reduced medical facilities. The dramatic method with full use of sound effects and music will be used. The story of fictitious but typical Dr. Tom Riggs and Dr. Paul Gerard and their families, patients, friends and military associates will be carried forward. Subject to war time exigencies, the program is planned to run twenty-six weeks. As heretofore, this is a sustaining program; no radio station derives any revenue from broadcasting it. Time on the network and

on local stations is given gratis as a part of radio's contribution to public service, and the scientific contribution of the American Medical Association to the program is made in the same spirit. Production costs are shared by the National Broadcasting Company and the American Medical Association. Because this is a sustaining program it may face competition on the schedules of local stations with revenue producing features. The National Broadcasting Company does not guarantee the broadcast locally of sustaining programs except over its own stations, yet from seventy to a hundred stations have customarily broadcast the American Medical Association programs. Evidence of local interest in the program on the part of medical societies, auxiliaries, health departments, schools and voluntary health and civic agencies if submitted to the radio station well in advance may result in local broadcasting of the program when otherwise this might not occur. If there are schedule conflicts on local stations, the following suggestions have sometimes resulted in eliminating such conflicts: (*a*) sponsors of local programs in conflict with Doctors at War may be induced to accept a change of schedule if equally good time can be procured for them; (*b*) the program may be recorded and broadcast at another available time on the local station schedules.

SNAPSHOTS OF DEATH

The Division of Vital Statistics of the Bureau of the Census has recently initiated a new series of mortality summaries [1] which supply an amazing amount of interesting and significant information. For comparative purposes the mortality figures since 1933 are of more value than those of earlier years, since it was in 1933 that Texas became the final state to enter the registration area. The number of annual deaths of males is higher than that of females in every age group up to that of 75 years and over, when the reverse is true. In 1940 New Hampshire had a death rate from diphtheria of 0.2 per hundred thousand of enumerated population; this was one death for the entire state that year! The deaths from tuberculosis of all forms in 1940 was 36.6 per hundred thousand among white persons and 123.5 among Negroes; it was 33.7 and 112.7 respectively for tuberculosis of the respiratory system. In the same year the death rate from syphilis was 9.9 among white persons and 55.1 among Negroes. However, from cancer of all forms the death rate in 1940 was 125.0 among white persons and only 78.4 among Negroes. Although the death rate from "dysentery" for the United States as a whole was only 1.9 per hundred thousand in 1940, it was 10.1 in Texas and 14.1 in New Mexico. With a death rate for the United States from malaria of 1.1, that for Arkansas was 9.1, for Alabama 7.3, for South Carolina 6.2 and for Florida 5.1. These data illustrate the wealth of information available and the ease with which such statistical data can be used to clarify those health problems of age, racial, local or other groupings which most need attention.

1. Bureau of the Census Vital Statistics, Special Reports, Mortality Summaries, Introduction and Population Data.

EPIDEMIOLOGY OF GONORRHEA AND THE NAVY

If 8,569 cases of diphtheria or any other acute epidemic disease had been reported as occurring in the 149,618 average population of the United States Navy during 1939, the resulting reverberations would have been nationwide. This number of cases of gonorrhea actually did occur, according to Stephenson and Lang [1] of the United States Navy Medical Corps without producing a ripple of public furor. For approximately thirty years, they say, gonorrhea has consistently remained either in first or in second place among the leading causes of morbidity in the Navy. To learn something of the epidemiology of gonorrhea in the naval service, a ten year unpublished study of this disease has recently been made by Lang.[2] Some of his observations were that the overall admission rate for the entire navy was 60.61 per thousand; the ten year admission rate for all forces ashore was 37.92 per thousand and for all forces afloat 79.8 per thousand. In the forces stationed within the continental limits of the United States there was a ten year rate of only 31.78 per thousand as compared with a rate of 57.65 per thousand for those stationed ashore outside the continental limits; the ten year rate for the forces afloat within the continental waters of the United States did not differ significantly one from the other, but the ten year rates for forces afloat in foreign waters were astonishingly higher, the highest being attained in the Asiatic Fleet, where it reached 148.41 per thousand. In a special service squadron stationed in the Caribbean waters it was 104.76 per thousand, while in the European Squadron, in two years of experience, the rate was 142.13 per thousand. The history of venereal disease control in the Navy shows a series of steps, many of which were established on a trial and error basis. The program as it exists today is the aggregate of the most successful of these steps. The policy of attempting to control venereal disease by rigid and severe disciplinary measures has been tried and abandoned as not accomplishing its purposes. Under existing regulations, naval medical officers are now required (1) to acquaint all persons in the naval service regarding the nature and dangers of venereal disease, (2) to provide prophylaxis for venereal disease and (3) to give prompt and adequate treatment to all who develop a venereal disease. Stephenson and Lang conclude that one of the major steps in an epidemiologic approach to this disease is cooperation of all competent organizations to assist the authorities in dealing with commercialized prostitution. Today, they say, there is urgent need for more vigorous nationwide intensification of the organized social hygiene program to reduce the morbidity from gonorrhea. With the personnel of all the armed forces of the United States increasing at almost astronomical rates, the epidemiologic importance of controlling venereal disease in the civilian population cannot be overemphasized.

1. Stephenson, C. S., and Lang, F. R.: Some Epidemiologic Aspects of Gonorrhea in the United States Navy, Am. J. Syph., Gonor. & Ven. Dis. **26**: 584 (Sept.) 1942.

2. Lang, Frederick R.: A Ten Year Study of Gonorrhea in the U. S. Navy, unpublished research and thesis for degree of Dr.P.H., Johns Hopkins University.

U. S. SENATE COMMITTEE ON EDUCATION AND LABOR

REPORT OF HEARINGS HELD BEFORE A SUBCOMMITTEE OF WHICH SENATOR CLAUDE PEPPER IS CHAIRMAN

In addition to Senator Pepper, the members of the subcommittee are Senator Lister Hill (Democrat), Alabama; Senator H. H. Schwartz (Democrat), Wyoming; Senator Robert M. LaFollette Jr. (Progressive), Wisconsin; Senator Eugene D. Millikin (Republican), Colorado.

NOVEMBER 2, 1942

Present: Senators Pepper and Lister Hill; also Robert K. Lamb and F. P. Weber, special assistants to the committee.

STATEMENT OF DR. FRANK H. LAHEY,
Chairman, Central Board of Procurement and Assignment
accompanied by

COMMANDER MAXWELL E. LAPHAM,
United States Navy

Senator Pepper: Doctor, if you will state your full name and connection, and then give any statement you care to make on this whole subject of manpower, public health, or the doctor angle of the situation, we will thank you very much.

Dr. Lahey: I am Dr. Frank H. Lahey, Chairman of the Central Board of Procurement and Assignment.

Senator Pepper: What are the duties of the agency of which you are the chairman? *Dr. Lahey:* We all had the feeling, all who participated in the last war, that the obtaining of doctors then was on such a helter-skelter method that there were certain areas of depletion. In addition to that we had known the English experience in meeting the needs of the armed forces and we knew that they had arrived at a quota system plan in order to preserve their limited number of doctors. The National Committee on Medical Preparedness met to discuss this problem. I happened at that time to be the President of the American Medical Association. It suggested that to avoid depletion and to be able to obtain an adequate number of doctors for the armed forces and still be able to retain enough for industry, hospitals and civilian population, it would require some over-all program or plan for obtaining and distributing them. By a letter from the President, an Executive Order, this board was appointed and I was appointed chairman; Dr. James Paullin of Atlanta, Dr. Harvey B. Stone of Baltimore, Dr. Willard Camalier of Washington (representing the dentists) and Dr. Harold Diehl of Minneapolis were appointed members.

Previous to the establishment of this plan the American Medical Association, through its Committee on Medical Preparedness, had foreseen the possibility of war. They established a national roster of physicians at their own expense. They had all the doctors of the United States tabulated as to their training, age and so forth. Then came the appointment of this committee and it was turned over to them. Then a second questionnaire went out, 250,000 of those went out to doctors, dentists and veterinarians.

In those questionnaires the doctors were given four choices: 1. Will you go in the Navy? 2. Will you go in the Army? 3. Will you be dislocated elsewhere? 4. Do you wish to remain where you are and participate in the war through your efforts where you are? They answered, the answers have been tabulated, so we know what their preferences are.

In order that we might be certain that we had viewed the situation as an all-over picture, quotas were established for the various states. In establishing these quotas weight was given to the fact that there are more doctors in New York than there are in the rural communities of your state, Senator Hill, of which I happen to know, having spent some of my life there. Dividing the population into suburban and urban, the quotas were weighted to counterbalance, as near as possible, the needs, and these quotas were established for each state. The quotas have been overmet in some states and undermet in others.

By the directive order and by the request of medicine this has been done on a voluntary basis. The Procurement and Assignment Service possesses now no compulsory power either to compel a man to enter the service or to compel him to remain where he is placed. But Procurement and Assignment Service set its organization up on what seemed to me a quite ideally democratic basis. It appointed a chairman for each corps area and with it advisory committees, under that a state chairman and under that district or county committees in order to establish essentiality and availability. Essentiality for a medical school means How many do they need to run a medical school? How many do they need to run a hospital? How many does a given community need?

The country was divided, in terms of its doctors, dentists and veterinarians, into available and essential. The Army has been interested in men 45 or under, literally 37 years of age or under with troops. They have said that for troops they would like men 37 years or under and for specialists they would like those between 37 and 45 years of age.

We really had the situation quite well in hand, as I think I can show you. While we possessed no authority, we could acquire it through the Selective Service.

We sent a letter to every doctor who had signified his willingness to serve, in which was roughly this statement: "You are within the draft age; you have signified your willingness to serve, in a questionnaire; you have been investigated by Procurement and Assignment and you have been found available, nonessential, to your community, medical school and hospital. You are therefore directed to seek a commission."

At the same time Selective Service headquarters in a state was notified to this effect: "This man (John Smith) has signified his willingness to serve; he has been found available; he is within the draft age. This information is given to you to decide whether or not you desire reclassification of this individual." On May 16 a directive had been issued from General Hershey's headquarters which said that any medical officer because he obtains a commission has sufficient income so that he may not claim exemption on the basis of dependency. That gave us a good deal of authority, it seemed to us. This isn't critical, I have to state the facts—immediately on the action of Congress that a man who was married did not come under this head, as soon as the men for instance who were found available, who were single, who were not necessary, we had no authority over them.

In the same way we have no authority if we say to a man, "You are in an area which is being depleted, we think you ought to stay"—if he says, "I won't," we can do nothing about it. Yet on the other hand we realize that sometimes—

Senator Pepper (interposing): Now the Army that takes him of course could do something about it, couldn't they, or the Navy? *Commander Lapham:* The Army and the Navy I think have cooperated very well in that respect.

Senator Pepper: Suppose a man has presented himself from some area where there was a shortage of doctors already, is he allowed by the Army or the Navy to get a commission? *Commander Lapham:* No, sir, he would not be commissioned unless he had been cleared through the Procurement and Assignment Service.

Dr. Lahey: He means that if we marked him "essential," the Army wouldn't take him.

Senator Hill: You mean essential in carrying out the private practice in that community? *Commander Lapham:* Yes, sir.

Dr. Lahey: In providing adequate care for that community.

Senator Pepper: Is it a fact, for instance, that in the state of South Carolina there is a vast coverage in the number of doctors that they have contributed in excess of their quota? *Commander Lapham:* That is right.

Senator Pepper: How did that happen? *Commander Lapham:* South Carolina has—*Senator Pepper* (interposing): Do you have the quotas there, and would you think it proper that they be put in the record? If it is proper I would like to have them in the record, wouldn't you think so, Senator Hill?

Senator Hill: As I recall it, the state of Oklahoma is 160 per cent. *Commander Lapham:* South Carolina is 170 per cent. *Dr. Lahey:* New Mexico is 224. *Commander Lapham:* Alabama is 194 per cent.

Senator Pepper: What about Florida? *Commander Lapham:* Florida has supplied 115 per cent of its quota.

Dr. Lahey: You might be interested in knowing how difficult it is to prevent a man from going into the service. I have just read a paper on the subject before the Interstate Post-Graduate Assembly in Chicago, last Wednesday. The man has everything to make him go in the service. He has his standing in the community, he has the pressure of the community; and

there is something you don't think of, he has the pressure of his wife who in turn has the pressure of the wife whose husband has already gone into the service.

Besides that he has another thing that you don't think of, and he has the right, it seems to me, to consider it. He has to consider where he will be when the war is over, in terms of the man who is gone and the man who is not gone, because I went through the last war and I know what the reaction is.

After all, you can talk about it, but within the medical societies and the inner sanctums where some of the decisions are made, the division has been made into who served and who did not—and he knows that!

So after all, even though we tell him to stay, and even though he knows that the community goes on, sometimes his patriotism—and I mean pure, unadulterated patriotism—and even personal interest, prompts him to do it.

Senator Pepper: Which indicates what may be the difficulty, if not the injustice, of making it a matter of personal decision as to whether he shall be in the service or out of it?

Dr. Lahey: Senator Pepper, if there were some way by which—and you and I know that it is about the only way that you could really make it stick—if there were some way whereby the responsibility for the decision could be taken off the man, or even if it could be lessened to a degree where I could say to a man—and this too is in the paper—if I could say to a man, "You have to do this, but here is a uniform and you are on detached service without pay until you are no longer essential, which saves you from saying to everybody who raises his eyebrows at you, 'This is the reason I am not in the service,'" that would be very helpful. You could give him a button—we have talked about that—but there are so many buttons that no one would know what it was, and if you have a button you have to explain what it is, and if you have a certificate you have to get it out and unfold it and then ask somebody to read it.

Senator Hill: Doctor, the very statement you made is one reason that I have been so strong for a National Service Act. I think we will all agree that every person ought to serve in the place where that person is most needed and can make the greatest contribution to the war effort. Yet for one hundred and fifty years in this country we have thought of a war effort in terms of an Army and Navy, and naturally the urge of patriotism drives men, and drives public sentiment to drive men, to the Army and the Navy.

A National Service Act, which would mean a total mobilization of all of our people, men and women—under such an Act the Government would make the decision, the Government would make this determination.

The Government would say to Mr. Smith, "You can make your greatest contribution in the Army, we will take you in the Army." "Mr. Jones, you can make your greatest contribution by remaining home and dealing with the medical needs of your community; therefore, you stay at home."

Dr. Lahey: That would relieve us of being in the paradoxical position of saying, "You go," and "You stay," and from being in the paradoxical position of saying that you shouldn't deplete the states.

Senator Hill: And the truth of the business is this, that up to date—

Dr. Lahey (interposing): They have done pretty well on the whole.

Senator Hill (continuing):—up to date, although you have done pretty well, you haven't been able to say that you can't go to any one?

Dr. Lahey: We haven't been able to do that at all.

Senator Hill: As you say, these figures here show Alabama—194 per cent, New Mexico, I believe you said was 224—I know of a county in my state of Alabama where, before this war came they had seven doctors, practitioners. Today, outside of the county health officer, and of course he is not a practitioner, they have only one practitioner in that entire county—and most of them are either in the Army or the Navy, under the urge of patriotism. Those men have gone, but some of them should have been designated to remain at home and carry on their work.

Dr. Lahey: I know the Procurement and Assignment Service has made lots of mistakes. I would not for anything have you think that we think it is perfect; it is far from it. After all, here has been a very urgent problem, done quickly, requiring a set-up and lots of things. But the one thing I would like to get before you clearly is that on the whole medicine has done pretty well; it has met the demands. But I should say that the greatest criticism of it has been that it has been uneven in the participation as to states.

Senator Hill: But as you say, it did not lay within your power to bring about that evenness? *Dr. Lahey:* I think 65,000 doctors were under 45 years of age. We had it pretty well in line as long as we had the pressure of Selective Service on them, and until they could fall back on the fact that a married man did not come under this—we had them pretty well up to that time. In fact, we all sat around and thought that our headache was pretty much over when we sent this letter out directing them to seek commissions and asking Selective Service to reclassify them.

Senator Hill: What was the date of that letter, Doctor?

Commander Lapham: That was in May, sometime.

Dr. Lahey: It was almost at the same time that the directive came out from Congress.

Senator Pepper: Have you got into the service most of the doctors who are not married, under 45? *Dr. Lahey:* Yes, we have got most of them. There are still the states that have not met their quotas—California, Illinois, Pennsylvania, New York and Massachusetts. There are still a number of doctors in those states who are single, available, who haven't gone, as a result of which pressure will be put on institutions, medical schools and hospitals in other states who have met their quotas, in order to meet the Army, Navy and Aviation demands.

Senator Hill: It is true that a man under 45 years of age is subject to draft, and when inducted into service they could be detailed to do medical work. *Dr. Lahey:* You wouldn't have to worry about that. It would probably do them good to get two or three months of drilling, and then they would be taken out and put into medicine.

Senator Hill: I should think they would be put in almost immediately. *Dr. Lahey:* I don't have any doubt about that.

Senator Pepper: Is that the reason those states are behind in their contribution? Because there happen to be more married men in those states? *Dr. Lahey:* Possibly. And of course they didn't have quite the enthusiasm as in other states.

Senator Hill: In a state where you have a large rural population you have your small cities, your small centers, and pressure is strong. In a little town of 2,500 to 4,000 where everybody knows everybody else, the pressure is much stronger than it would be in a great city like Boston or New York. *Dr. Lahey:* That is right. And I would like to tell you too—and I mean this sincerely and it isn't said critically—I just can't help but be impressed by the fact that the patriotism is higher in the smaller places. I don't know what there is about the city that dilutes it. But when you look at these figures that come out of the rural communities, you can't avoid that conclusion. When somebody says that the reason for that is that they can get better jobs in the Army, that doesn't hold water—

Senator Hill (interposing): In that connection have you made a breakdown in one of these states that is under its quota, to see how the rural sections of that state compare with the urban sections? *Dr. Lahey:* We happen to have New York, which is a pretty good state. We know that New York happens to have a chairman and a vice chairman. The chairman is in New York—I mean of Procurement and Assignment—and the vice chairman is in the northern part of the state. That part has done infinitely better than New York has, that is New York City.

Commander Lapham: We have here, however, a list of the percentages of the physicians, the effective physicians in every state, who are on active duty now either in the Army or Navy, as compared with the percentage of rural population—

Dr. Lahey (interposing): Ask him as to any state what percentage you want to know. Twenty-two per cent is the average number of doctors—

Commander Lapham (interposing): Of effective physicians.

Dr. Lahey: You must remember that there are 27,000 over 65 years of age, and we have arbitrarily set those—because they run to 102—at 33 per cent efficient, which means, in terms of manpower that you have got 9,000 efficient out of the 27,000. Now if you ask him as to any state he can give you the percentage as relates to urban and suburban.

Senator Hill: We have been talking about the state of New York. You might follow through on that.

Commander Lapham: As Dr. Lahey says, the percentage of effective physicians throughout the country who are in service is about 22 per cent. In New York 26 per cent of the effective physicians are on active duty now, whereas the rural population is only 17.2 per cent, according to the Census of 1940. Alabama, which has 18 per cent of its effective physicians in the service, has a rural population of 69.8. So that actually New York has not done so badly in relation to its suburban.

Senator Pepper: You mean that that percentage of its total rural population is in the Army? *Commander Lapham:* That is the percentage of the total population which is rural. *Dr. Lahey:* We have been interested in trying to keep track as to what is happening to the rural population. Of course, Senator Pepper and Senator Hill, everybody that looks at this sensibly knows that the basic error in terms of being able to accomplish what we would all like is compulsion.

Senator Hill: I was going to make an observation. It goes right back to the same proposition that we had in the days before we had our Selective Service, with reference to our armed forces, to the old volunteer system. You simply cannot get your maximum results from any kind of a volunteer system. You couldn't build your Army as you should build it, under a volunteer system. The British made a terrible mistake during the last war of starting out with a volunteer system, when the flower of Britain's manhood was killed off in the early days of the war, and during the latter days of the way they didn't have this fine young manhood to be officers. We profited by their mistake and as soon as we went into the war, following the leadership of the President, we passed this Selective Service Act.

I think we are going to reach the same conclusion—we are speaking now of a total war, such as we are in—we are going to have the Selective Service system extended to the entire population, and I think these figures show that.

Commander Lapham: On the other hand, sir, from the standpoint of the physicians in this country, they have done remarkably well; there are 10,000 more physicians in the service now than there were at the end of the last war.

Senator Hill: Oh, let me say this to you, I hope nothing that I have said to you will be construed in any way as a criticism, they have done wonderfully well. But you can't gage this thing today by men going into the armed services. In a total war you have got to be put on a basis, as I have said, of meeting your over-all needs, your total needs, your civilian needs as well as your military and naval needs. The only way in my opinion that you can meet those needs, on the most efficient basis, is by an over-all selective service.

All honor to the doctors for the way they have responded, I am sure there is no group in America that has responded any finer than they have.

Dr. Lahey: What happens under this system is that the Army, the Navy and Aviation requisition what they want in the way of doctors. Whether they requisition more than they want, to be on the safe side, that is not our business! We don't know.

. . . . . .

Senator Pepper: Now, Doctor, on this last point that you just suggested, you act upon the directions of the Army and Navy and Air Service in the procurement of physicians? *Dr. Lahey:* Yes, they set a figure as to what they want.

Senator Pepper: And it is your job to get it? *Dr. Lahey*: Yes, and this I would like to get before you, that we not only have the figure that they requested as of January 1st, but we are around 127 ahead of them. So we are up to the figure that they requested as of the first of January.

Senator Pepper: In other words, like the draft boards, you have met your quota? *Dr. Lahey*: Yes, sir.

Senator Pepper: Do they tell you what sections of the country they are to come from? *Dr. Lahey:* No, sir.

Senator Pepper: Did they give you the various classifications that they wanted, or did they tell you to get so many doctors? *Dr. Lahey:* They set certain standards as to age groups.

Senator Pepper: As you said a while ago, less than 45, or less than 37 for troop service? *Dr. Lahey*: Yes.

Senator Pepper: You are primarily, then, the medical procurement agency or the doctor procurement agency for the armed services? *Dr. Lahey:* That is right, that is the purpose of this service.

Senator Pepper: Did anybody in the government, so far as you know, at the time they gave you one of those requisitions, consider that requisition, either at that point or before it was issued, to determine whether or not in the first place the Army needed that many doctors in comparison with their needs and in comparison with what other countries similarly situated were using; and, if they needed that many, whether they needed them all at that time or not; or whether the civilian population could afford to give up that many doctors without, as Senator Hill pointed out, the total war effort in another direction being hampered? Was there any such overall decision ever made on such a requisition, to your knowledge? *Dr. Lahey*: That question presents quite a large order, but I should say that in general the answer to it would be no.

Senator Pepper: In other words the board of which you are the distinguished chairman did not consider that you had the authority to pass on the propriety or accuracy or excessiveness of these requisitions, your job was to fill the quota? *Dr. Lahey:* I would put it this way. At no time—and this isn't critical—have we been consulted as to the authenticity of figures. We only get a requisition, such as from Aviation, the first one was "We want 6,100 doctors by January 1st." Recently it was 2,400 more that they wanted. And from the Army, without stating the figures—although I talked with both Surgeon Generals this morning so they would know I was coming here—but not to state figures, they say, "We want this many doctors by the end of the year." Left to us was the problem of trying to protect the public.

Senator Pepper: Do you know whether the head of the Public Health Service was ever consulted by the Army or the armed services to know whether the civilian population could give up that many doctors or not? *Commander Lapham:* Not that I know of. *Dr. Lahey*: But he and his representatives have been in on a good bit of the consideration of all of these problems.

Senator Pepper: But you don't know of any board, of your personal knowledge, or any agency, which has sat down and viewed this overall problem of the needs for medical services by the armed forces and also by the civilain population? *Commander Lapham:* Except our own board.

Senator Pepper: And as you say, your own board did not have authority to do that. *Commander Lapham:* That is right. *Dr. Lahey*: Of course, as long as there is a surplus, it is easy—that we all know—it is only when we get toward the bottom of the barrel that you really get down to the need for consideration, and without being dramatic about it, from the standpoint of our responsibility to the public, we consider that we are getting close to the bottom of the barrel.

Senator Pepper: And in some areas— *Dr. Lahey* (interposing): We are at the bottom. Because of that I have had in my mind—and I am sure the other members of the board have had in their minds—the need of a better coordinated effort and a better explanation as to why these men are wanted. So next Saturday morning we have requested that the Surgeon General of the Army, the Surgeon General of the Navy, of Aviation, of Public Health, General Hershey, a representative of the Secretary of War, and Mr. McNutt, be present at a meeting.

Senator Pepper: But, Doctor, unless you are vested with some authority different from what you already possess, when you have this conference and you have made that very able speech of which you are capable, then these gentlemen can say, "Thank you very much Doctor, Boston is a lovely city, we hope we may drop in and see you sometime, we enjoyed hearing you"—and then walk right out and send you another directive. There isn't much you can do about it, I would assume, the way the thing is presently organized. It is a familiar story to us, of course, because we have been seeing the same thing happen in other areas where, for example, men are being pulled out of key positions in industry, all over the country. We are not blaming the Army for wanting them because they have got a job to do.

Senator Hill: But the same pattern follows right through.

Dr. Lahey: I am always a little sensitive lest I be thought critical, because after all I came to Washington a little uncertain about what I would be able to accomplish after functioning more or less as a beneficent dictator in a clinic where I could hire, and fire, and not be accountable to any one. But I will say that really I have received excellent and complete cooperation and willingness, and with respect to the Surgeon Generals' teams, when we said to them, "These states are overdrawn and we want the recruiting teams out," they went out, and we have now recruiting teams only in the five states that are below their quotas.

Dr. Lamb: How long has that been, Doctor? *Dr. Lahey:* I can't tell you. *Commander Lapham*: That has happened from time to time.

Dr. Lamb: When were those recruiting teams stopped except for these five states? *Commander Lapham*: As a matter of fact they are being withdrawn from some states now, but very shortly after we requested them to they usually have withdrawn their recruiting teams. *Dr. Lahey*: And there is a directive, and order from General Ulio, that they shall be taken out.

Dr. Lamb: What is the date of that? *Commander Lapham*: That was within two weeks. *Dr. Lahey*: I have talked with the Surgeon General from time to time concerning the necessity of withdrawing these teams.

Dr. Lamb: As I see it, Doctor, the operations of the Procurement and Assignment Board have been very much like those of the Selective Service. You have been more or less parallel with them for the medical profession? *Dr. Lahey*: If we just had half of their authority.

Dr. Lamb: With the exception that you don't have as much authority as they do? *Dr. Lahey:* That is right.

Dr. Lamb: But the final determinations are not up to you and the pressure, as on the Selective Service to recruit, the emphasis is entirely from the military forces for recruiting? *Dr. Lahey:* That is right. I would think too, without criticism, that there have been individuals representing the military forces, who have felt only the responsibility of getting them in, and we know that in certain areas I have had to go to the Surgeon

General and say, "You must stop telling these doctors that they will either get into the service or you will put a gun on their shoulder."

Dr. Lamb: As far as that is concerned, some doctors have had guns put on their shoulders, have they not? *Dr. Lahey:* That is right.

Dr. Lamb: Would you say that there are many doctors now serving as privates in the Army? *Commander Lapham:* There have been a few and it has been a good thing in some instances. For instance, in New York City eight or ten of them were inducted as privates. *Dr. Lahey:* It has been a stimulating thing to the men who have delayed beyond a reasonable point, who are really available.

Dr. Lamb: As far as the powers of compulsion are concerned, suppose that the armed forces had had the power of compulsion at the start of the war, and suppose that they had exercised it as they have exercised their recruiting power, would you not have had approximately the same number of doctors in the services today that you now have, or perhaps even more? *Dr. Lahey:* That is right.

Dr. Lamb: In other words, it was not compulsion alone that was lacking in this particular situation. The number of doctors, and their distribution in the armed forces or in civilian life was not affected as directly by the lack of compulsion as it was by the absence, on the part of the military services, of some plan for balancing civilian as against military needs. *Dr Lahey:* If the Army had had the authority, plus a plan for equalized distribution, it would have worked all right. But if they had the authority without that plan, we would probably have been a good deal worse off than we are.

Dr. Lamb: Precisely. The number of doctors who have been taken in already, in proportion to the total doctor effectives, is already sizable, wouldn't you say? *Dr. Lahey:* Suppose I recite the figures, although they may be confusing. If we say there are 176,000 doctors in this country—

Dr. Lamb (interposing): That figure is arrived at how? *Dr. Lahey:* American Medical Association roster.

Dr. Lamb: How many of those are effective? *Dr. Lahey:* We start with 27,000 over 65. But you can begin to knock off some of those right away because—and these figures happen to be in my mind—you have 2,000 that are in the Navy and Army on full time, and they come off. You have 15,000 who are in positions which do not involve treating patients, they are on jobs in laboratories and so on, various jobs that do not involve the care of patients. So they aren't available for any kind of care. You have the 27,000 that I just spoke of, and if you count those as 33 per cent efficient, you knock off 18,000 more. You have 7,000 who are having a year's training, or more, in medical schools, and you have 5,000 residents. A resident is a man who has gone beyond the stage of training but who stays on to become a specialist, or carries on in his process of being a specialist, some of the work in a hospital.

Dr. Lamb: That reduces it to just over 100,000? *Dr. Lahey:* No, I don't think so. *Commander Lapham:* That is not correct, it is about 128,000 when you consider the effective physicians in the country.

Dr. Lamb: You are including some of the over 65 in that? *Commander Lapham:* Yes, 18,000 over 65 come off instead of 27,000. There are 33 per cent available, so you can knock off 18,000. *Dr. Lahey:* So that brings you down—without again going into figures which the censors might not want published—that brings you down to around 120,000 or 130,000 doctors. Knock off what you want for the Army and you are down to around 80,000 doctors left for the civilian population. You start with 130,000,000 and when you figure that the Navy takes care not only of its own personnel but it also takes care of about 2,000,000 civilians, their associated civilians, besides; and that the Army is taking care of some of their civilians, you can roughly knock off 10,000,000 from the 130,000,000, which leaves 80,000 doctors for 120,000,000 men, which is roughly 1 doctor to 1,500 people. But that is very uneven.

That brings us down to about 1 in 900 in New York State. To show you how the problem gets complicated, I have just come from Omaha where I met all the doctors in the Corps Area there in the Procurement and Assignment Service, and it gets down, as it does in South Carolina or even in certain parts of Alabama, to 1 to 3,000 or 4,000 and even more difficult than that, because they live in rural communities. The first time that it gets put up to us is that living in rural communities they can't even get to centers of medicine because they can't get gasoline and tires with which to get there.

Senator Hill: You spoke of 1 doctor to 1,500 population; what would be the ideal in your opinion? *Dr. Lahey:* I think 1 to 1,500 is excellent. Before the war it was 1 to 975. *Commander Lapham:* But that includes the whole 176,000, and we know that a good many of them were not giving direct medical care. *Dr. Lahey:* I would say that 1 to 1,500 is not only good but it approaches luxury a little bit.

Dr. Weber:. Do you feel that prior to the war we had a sufficient medical personnel for the health of the nation? *Dr. Lahey:* Yes.

Dr. Lamb: If it had been well distributed? *Dr. Lahey:* Yes.

Dr. Lamb: But it was not? *Dr. Lahey:* No. For instance, I know these figures—again before the war—I know that South Carolina was 1 to 4,100 of population.

Dr. Lamb: And they have taken what per cent from them? *Commander Lapham:* Their quota is 170.

Dr. Weber: So that would leave them what? *Commander Lapham:* Of course we base these quotas— *Dr. Lahey* (interposing): These quotas were balanced and weighted. *Commander Lapham:* One to 1,500 was the basis of the quota.

Senator Pepper: But they were already behind in South Carolina before the war started? *Dr. Lahey:* That is right.

Dr. Lamb: So that perhaps the quota originally should have been so distributed that the city of New York would have been much higher than the one you put? *Dr. Lahey:* That is what I meant when I said that the quota was weighted in favor of where they had the greater number of doctors.

Dr. Lamb: What I meant was that if you had a ratio of 1 to 4,100 in South Carolina before the war, perhaps you should not have taken any from South Carolina, perhaps they should all have been taken from New York? *Dr. Lahey:* Well, we would like to have done so.

(Discussion off the record).

Dr. Lamb: Now, Doctor, to go back to your figure of 80,000 which is the number presently available for the public, if the Army maintains its present ratio of 1 to whatever is the number of men, 130 or 140, whatever it may be— *Dr. Lahey* (interposing): I can tell you that. In the Navy it is at 6.5 and in the Army it is at 7.2.

Dr. Lamb: Per thousand? *Dr. Lahey:* That is right. In the last war—so you can have a comparison—in France, in the A. E. F., you had 6.6 per thousand, and in training back here you had 10.4 per thousand.

Dr. Lamb: So that the thing figures out to about 135 men per doctor. Now if they maintain that ratio of 135 men per doctor, and if we have a 7,500,000 man army, that indicates that we are going to have to take another 30,000 doctors out of our present supply? *Dr. Lahey:* That is what the meeting Saturday morning is called for.

Dr. Lamb: And if we take that number out of our present supply we are going to be in trouble? *Dr. Lahey:* We have just told the armed forces that they just can't go on at the present rate and take them out at that rate. We believe that if you ask industry and the civilians to accept a lower grade that you must ask it as a coordinated reduction of demands on the part of the Army.

Senator Hill: Speaking about that, doctor, we know we have made tremendous strides in saving manpower in many of our production industries. For instance, it takes only one-half the manpower now to build a certain cargo airplane that it did when Pearl Harbor occurred. Have they worked out anything to save this medical manpower? *Dr. Lahey:* The only thing I can tell you is that there have been two things. I talked with the Surgeon General this morning, and the Medical Administrative Corps that is now operating at Camp Pickett and two other camps will, when the program is completed, replace 7,500 doctors with civilians who will be trained in medical administrative lines, they will replace physicians.

When that program is completed, how many men it will produce, I don't know. I have heard figures about how many per month they turn out, around 700 I believe was the figure. I don't know whether or not that is accurate, and I don't suggest that it isn't, I just don't know. There is that plus the fact as you already know that the accelerated medical program will turn out approximately 6,500 men per year as opposed to 5,000 in previous years before they had this accelerated plan. To show you how you have to keep on your toes about this thing and how when you throw a pebble into a pond, where the ripples go no one knows, just think of the implications of this 18 and 19 year old draft. Without some agreement with Selective Service, you have dried up the supply of new doctors. There are some that have to be ear-marked for medical schools.

Senator Hill: In that connection, Doctor, I wonder if you have had any talks with General White, who is G-1 of the General Staff. He is the highest authority on personnel in the Army—that is his position occupies that status—or with the American Council on Education? It is my understanding that General White, and the others representing the War Department, and perhaps certain representatives of the Navy, and the

American Council on Education, are today endeavoring to work out plans—*Dr. Lahey* (interposing): I don't believe we will have much difficulty.

Senator Hill: I was just wondering whether you had been called in. If you haven't you certainly ought to be while they are working out these plans to provide for the education and training of some of these men who are about to be drafted, so we won't grind the seed corn. *Dr. Lahey:* We have a pretty good agreement with General Hershey that we will be called in. *Commander Lapham:* Dr. Elliott is working closely with us.

Senator Hill: He is, perhaps, representing your particular group? *Dr. Lahey:* Yes.

Senator Hill: We continue to see stories in the press about some 2,500 refugees, refugee doctors, I believe, here in this country. Do you know anything about that reservoir? *Dr. Lahey:* The thing of course that we meet with—and I have to face it all the time—is the doctor who says to me, "How can you expect me to go into the service when you preserve a refugee doctor from going into the service so that he can stay home and get my practice?" All right! I go to the Surgeon General and say to him, "What are you going to do with the refugee doctor?" and the poor man just can't answer me. He would like to handle them. I say to some of the people, "All right, why don't you take the refugee doctor?" Well, first of all they say that he frequently can't meet the requirements, educational requirements. Temperamentally he doesn't get on with some of the situations in which he finds himself. The FBI feel that with relatives in Germany who are susceptible to pressure, he is a dangerous person. But out comes a directive which I read this morning on my desk—and which Commander Lapham knows about—a statement to the effect that about the only thing they know about him is that you can put him in these dislocation areas where you need to dislocate a doctor, and that is about the only place they know.

Senator Hill: When you say "dislocate," Doctor, what do you mean? *Dr. Lahey:* Relocate him, put him in Mobile, Wichita, Kansas, or some of these other places. On the other hand, three went to Norfolk and got turned down by the hospital that was complaining about the situation down there.

Senator Hill: I wouldn't reflect on these refugees in any way, but I suppose they have doctors in these Japanese camps, don't they? *Dr. Lahey:* It has been repeatedly suggested to us that they be put out there. *Commander Lapham:* They are using Japanese doctors out there now. *Dr. Lahey:* The problem of dislocating the refugee doctor isn't as simple as it sounds to us on the surface.

Senator Hill: I can understand how a local doctor would deeply resent the government bringing in this doctor who wasn't even a citizen of our country—some are and some are not. *Commander Lapham:* But the ones that aren't are the ones we are having the greatest difficulty with. *Dr. Lahey:* There originally came out a directive to the effect that any refugee physician, particularly a friendly ally, could join the Army and in three months he would be given his citizenship. That was simple, but that hasn't been done.

Senator Pepper: That hasn't been adopted? *Dr. Lahey:* No, and if you tell them that, you can't back it up.

Senator Pepper (interposing): Couldn't the Army take them in; would they need legislation to take them in? *Commander Lapham:* No, but they didn't feel they could afford to take a great number of them in because of their background.

Senator Pepper: Aren't there places where you could put them, that is, where they would be subject to assignment so that the dependable and responsible doctors would assign them to the type of work that would be useful and yet they wouldn't have a chance to give anybody an over-shot of something and kill them? *Commander Lapham:* A great many of them are being used in medical schools and hospitals.

Dr. Weber: You mean that a directive was issued and that the Army and the Navy have been unwilling to follow the directive? *Dr. Lahey:* I think the Navy has an absolute rule that a man has to have been a citizen for ten years.

Senator Pepper: There is nothing, I suppose, immobile about that rule if they wanted to change it to meet national policy? *Dr. Lahey:* My views about immobility have been greatly changed.

Senator Pepper: You have discovered that the greatest principle in the world is inertia, haven't you? *Dr. Lahey:* I have. Let's again come to a simple thing, like the problems that confront us. We have a doctor that goes to Texas—let's pick that state because it isn't the place—a woman doctor. She says, "I have made quite a contribution to come here and why should I, who have passed the National Board, be told by Texas, which doesn't recognize the National Board (and remember the place I am talking about isn't Texas), that if I want to fill a place down here I must pay $25 and take an examination, and I am damned if I will." I don't blame her.

I thought it would be an excellent thing because I come from Massachusetts and because we have a biddable governor, one who is reasonable I mean, that I should go to the state board of registration of medicine and to the state medical society and to the governor and say that it would be an excellent thing for me when I speak before the National Meeting of the State Secretaries of State Medical Societies in Chicago on November 19, to say that I bring from my own state the action of the governor during the war that he has lifted this interstate requirement and that any one that the Procurement and Assignment Service selects for the duration of the emergency can practice there. Well, the governor agrees, the board of registration of medicine agrees, and the state medical society agrees, but the attorney general says it cannot be done unless it can be demonstrated that there is a need for dislocation within the state.

Senator Pepper: It looks to me as if a proclamation of the governor could handle that.

Senator Hill: I imagine that the statutes do not give the governor the power except under that one condition.

Dr. Lahey: I spent last Saturday afternoon in the Department of Justice while they formulated this action so that it would be national. That is just going to take months, Senator Pepper, to get done, and it is again one of the things that is going to hamper you in the dislocation of people.

Senator Pepper: In that case it might be a situation which would justify action by the Congress? *Dr. Lahey:* That would be a very, very valuable thing.

We felt that the demand for doctors that came from the Army and Navy and Aviation was the priority interest. We said, "All right, that is what we must meet first." That has been met. Then we said, "The next priority interest is to assess the real needs of depleted areas because we can't do anything about dislocation until we know what the needs are." So we are in the process of assessing needs. Once having assessed them comes again the step that will be even more urgent than anything that you or I have considered. You can get a man in the Army—there is his conscience, his uniform, his accomplishment. But when you come to ask a man to give up a good practice and go down to Corpus Christi, and go down to your hot spot, Senator Pepper, Valparaiso, Florida.

Senator Hill (interposing): What about Pigeon Creek? *Dr. Lahey:* What have you got to offer him to go in there, because after all he goes in on his own hook?

Senator Pepper: Of course the satisfaction of living in Florida would atone for any hardship, while in other states it would be a hardship. (Laughter.) Doctor, if the situation suggests the necessity for an overall authority, preferably a civilian authority, to pass upon the whole question of the allocation of this particular kind of manpower,— . . . has your experience suggested to you that any well balanced program will have to be maintained in equilibrium only by an agency that can see the overall picture at one and the same time? *Dr. Lahey:* Well, I don't really feel quite competent to express an opinion for other than medicine.

Senator Pepper: I am speaking only about manpower as affected by medicine. *Dr. Lahey:* I would say that so far medicine has been easy, again due to the surplus, and that the injuries have been relatively slight, due to surplus; but if the war runs along any great period of time, it could present, under the present plan, great difficulties and dangers.

Senator Pepper: If you don't have this central agency or central tribunal? *Dr. Lahey:* I believe Commander Lapham has something to say on that.

Senator Pepper: Commander, what I was about to say is that if you do not have an overall authority, call it what you will, to keep in mind the needs of the whole nation, at home, abroad, civilian, military and naval, at the same time, is there not a great probability that you will have maladjustment and surplus and deficiency that will not give a well balanced program to the nation? *Commander Lapham:* I am perfectly sure of that. You are speaking of an agency that would represent the military forces as well as the civilians?

Senator Pepper: Yes, a group that would speak for the whole country and when it became necessary to allocate medical personnel, to military and civilian needs—in other words, whether you would lift the number of patients, as it were, that the doctor in the Army would have, from 135 to 200, and cut the civilian population down to a doctor for each 1,800, or something like that—all that is a balance of interest. But if you haven't got the same two eyes looking at the whole problem at the same time, it is not unlikely that there will be maladjustment. *Commander Lapham:* I see very little reason why the Army and Navy and Public Health Service and Procurement and Assignment couldn't get together on that.

Senator Pepper: Provided you had some way set up whereby there would be some umpire to resolve the difficulties? *Commander Lapham:* Yes. *Dr. Lahey:* Will you let me say one thing there? I think that the Surgeon General of the Army works at a great disadvantage. He works through the Service of Supplies. On the other hand—and I don't mean to boom the Navy just because I have a Navy man with me—but Admiral McIntyre, for instance, has complete authority. He is only responsible to the Secretary of the Navy. I can go to Admiral McIntyre and say, "I want this"—and get it. Poor General Magee can't do that because he doesn't have the power and authority. He is responsible to General Somervell.

Senator Pepper: And General Somervell determines the number of doctors that the Army shall have? *Dr. Lahey:* The authority finally comes down from there.

Senator Hill: The truth of the business is that General Magee is under Somervell; Somervell is under Marshall; Marshall is under Stimson; and of course Stimson is under the President. *Dr. Lahey:* I said to Admiral McIntyre, "How come I can say to you that I want to get this and that, and I get it snap-bang, and General Magee can't get it?" He said, "The poor man just doesn't have the authority that I have with which to get it."

Dr. Lamb: In this meeting that you are going to have at the end of the week, will some machinery be set up for reviewing the use now being made by the armed services of the doctors they have? *Dr. Lahey:* I don't know how we have any authority to do it, but that has always interested all of us, naturally.

Dr. Lamb: We have the impression that a review would reveal that many of those doctors could be better used and be much more efficiently worked than they are being at the present time. *Dr. Lahey:* After all I feel that without accurate knowledge of how they are being utilized and distributed, it certainly is not within my power to be critical.

Senator Pepper: But isn't it rather lamentable that there is nobody so far, that you know, who has the duty at the present time to speak for the civilian population and protect them? In other words, the Army and the Navy have complete authority to tell you how many they want, and so far you have been filling your quotas by their directives? *Dr. Lahey:* That is right.

Senator Pepper: Now so far as we know— *Dr. Lahey* (interposing): I would like to say this. We have told them that we have stopped for the year, I mean, that we will declare no more available.

Senator Pepper: Well, it is a question as to whether or not, in view of what you said in the beginning about the status that you occupy, that you are here by a directive, it is a question as to who has the final authority, like the armed services and the War Production Board. *Dr. Lahey:* That is right.

Senator Pepper: But naturally the Army and the Navy would be less than human if they didn't think primarily about what was their need and try to supply that need, and I would do the same thing if I were in their place. *Dr. Lahey:* That is the thing that prompted this meeting for next Saturday.

Senator Pepper: The President in the White House is representing the whole country, and we sitting here in Congress are representing the whole country, and we cannot sit by and allow one national interest to be emphasized over another if there is any way in which we can help it. We are thinking in terms of the whole country and somebody has got to make it. Of course we don't expect to make it, we are only raising the question as to whether it is necessary for some authority to be set up that will see the whole picture at the same time.

Senator Hill: I should think that the very reason you stated was the reason for the setting up of the War Manpower Commission, that we might have some overall authority on this whole matter of manpower. But the War Manpower Commission has no statutory status and has no power, really, of itself. It was decreed by Executive Order of the President, and I suppose the only power that it might have would be some power that the President had indirectly in some way that he had gotten from some other act, not with this manpower question primarily in mind.

Senator Pepper: You are under the War Manpower Commission? *Dr. Lahey:* Yes. *Commander Lapham:* We have the responsibility of protecting the civilian needs, but we haven't the power.

Senator Pepper: Is the War Manpower Commission supposed to be concerned with the nonmilitary aspects of manpower, or not? Does Mr. McNutt have any authority to say, "I am very sorry Mr. Army (or Mr. Navy) but I will not recognize your requisitions in excess of so much, I don't feel that I can approve your requisitions for more than so many"? *Dr. Lahey:* I don't know. *Commander Lapham:* We have requested Mr. McNutt and Mr. McNutt has requested of the Army and the Navy the withdrawal of these recruiting teams. Of course there is a representative of the Army and of the Navy on the War Manpower Commission; so we presume they were taking into consideration the military strength as well as the civilian strength.

Senator Pepper: I wonder if it would be considered impertinent on Mr. McNutt's part or on the part of his representatives if, at this conference on Saturday, he makes certain recommendations to the Army and the Navy about the use of their personnel, the number of it, and that there are going to have to be certain reallocations and that they may have to release a few people back to South Carolina, say, and may have to release a few people back to Nevada, "You have a good many doctors from that state that you are going to have to turn loose; I am sorry to have to interfere with your arrangements, but that is the order of the Manpower Commission."

I am very sure they would think Mr. McNutt was very much out of order. But that is what we face as a national dilemma when all these things are set up on separate programs and there is no unity overall. Except in the person of the President of the United States I don't know of anybody in Washington that has the authority to handle this. *Dr. Lahey:* That is why, in discussing this meeting on Saturday I used a word that I think settles the whole thing. I said, "There must be a cooperative agreement as to what they need, and an irrevocable one about what they will demand."

Senator Pepper: And there has got to be some agency that can pass judgment. That is, if you go in and say "I conscientiously don't think that the civilian population can spare more than a certain number" and the Army and the Navy say "We cannot run our Army and Navy without detriment to ourselves unless we have a certain number"—if you get into a situation like that somebody has to resolve that? *Dr. Lahey:* Yes, but there are circumstances that we do have to consider and that is that we have to remember that the Army as yet has really no experience tables on this war, and as the Surgeon General very properly said this morning—and I appreciate his position—if we get into an offensive war no one knows what will be the number of wounded and what will be the casualties and what will be required to take care of them.

Senator Pepper: That is all true but I mean that the same overall agency will have to take that argument into consideration in the allocation. *Dr. Lahey:* I should think he would like to be relieved of some of the responsibility.

Senator Pepper: There would have to be an umpire to reconcile the differences? *Dr. Lahey:* Yes.

Senator Pepper: Doctor, whom did you say you expected to be present at that conference on Saturday? *Dr. Lahey:* General Hershey, General Mcgee, General Grant (he is the Surgeon General of the Air Force), Admiral McIntyre, all of the members of the Board of Procurement and Assignment, and Mr. McNutt. We have had them together before but we really have never gotten a coordinated effort.

Senator Hill: Have you had them together since the Army reached its decision to have an army of 7,500,00 men? *Dr. Lahey:* No. And we have to take the Navy into account also, Senator.

Senator Hill: They propose an army of 7,500,000 men by January of 1944, and they propose to jump the Navy by another half million.

Senator Pepper: Do you handle procurement for both the Army, the Navy and Aviation? *Dr. Lahey:* Yes.

Senator Pepper: Likewise, if the Army sends you in a requisition you don't compare that with the Navy's requisition, or if the Navy sends you one, you don't compare that with the Army's? *Dr. Lahey:* I compare them, I know what they are.

Senator Pepper: But you don't pass judgment on them? *Dr. Lahey:* That is right.

(Off the record discussion.)

Dr. Lahey: There have been a definite number of states in which we have been able to meet that within the state, such problems as a doctor giving part time, an afternoon, to a community, for instance; such things as a man in industry being able to devote one half of his day.

Senator Pepper: I know at Valparaiso one of the men from our Public Health Service the other day was telling me that the Public Health Service assigned a doctor down there. He treats the people and they pay the Public Health Service, really, and the Public Health Service pays him a salary. He doesn't take fees from his patients, but they pay for his services and he turns that into the Department of Public Health. I wonder if that man had to take the state examination? *Dr. Lahey:* The Public Health man doesn't, no. *Commander Lapham:* But he would have if he had gone there to practice

medicine. *Dr. Lahey:* On the other hand, without complimenting your state, your state made a very generous gesture in terms of its willingness to meet a certain situation. *Commander Lapham:* The state medical association and the licensing board all approved the plan to bring this man in through the Public Health Service. *Dr. Lahey:* You can't live with this situation without reading all the things that go with it.

(Off the record discussion.)

Senator Hill: I don't want to embarrass you, Doctor, by any flattery, but I think I might as well say that there has been no other man in America, unless it was Dr. Will Mayo, who has ever founded and established such a clinic as you did. In fact I think your feat has been more remarkable than Dr. Mayo's feat for the reason that you went right into Boston, right there at Harvard, the oldest medical school, the oldest clinic in this country, or one of the very oldest, and right there in that center by Harvard University, Harvard Medical School and Harvard Clinic, Dr. Lahey has established without question the greatest medical clinic in the country.

Senator Pepper: Before you conclude that eulogy I want to say that he is just as eloquent and effective in aiding the war effort as a civilian as I saw him before this thing occurred, as he has been since.

Dr. Weber: Is it possible to get for the committee the actual number of doctors now serving as privates in the United States Army? *Dr. Lahey:* I would think the better way for you to do that would be to apply to the Surgeon General's office. *Commander Lapham:* They are privates a very short time; they are almost immediately taken into the Medical Corps. I doubt if there have been more than 15 or 20 in the entire United States. I may be wrong about that, but we hear of all of them and very few have come to our attention.

Dr. Weber: Is it true that pediatricians and obstetricians have been recruited just as any other practitioner? *Dr. Lahey:* Yes, and eye doctors also, because after all they have a basic and fundamental knowledge of medicine.

(Off the record discussion.)

Senator Pepper: Well, Doctor, you have been most helpful to us and we certainly do thank you, and you also, Commander; thank you very much.

TUESDAY, NOVEMBER 3

Present: Senator Pepper. Also present: Dr. Robert K. Lamb and Dr. F. P. Weber, special assistants to the committee.

STATEMENT OF DR. THOMAS PARRAN

Surgeon General, U. S. Public Health Service

Senator Pepper: Dr. Parran, we are very glad to have you here. I will ask you if you will begin by indicating briefly the war duties and responsibilities of the United States Public Health Service.

Dr. Parran: The war has brought a large number of problems to the Public Health Service which might be divided as follows: We furnish the medical service to the United States Coast Guard, and with the very large increase in that organization it has been necessary to recruit additional doctors for service aboard ships as well as at their shore establishments. Moreover, the War Shipping Administration has asked us to carry out the medical work for that organization, supplying medical care to all of their maritime training places.

The Office of Civilian Defense, nearly two years ago, soon after it was organized, asked us to provide the medical service for that organization, and we have given reserve commissions to a very considerable number of doctors both in the central office and in the various areas.

More recently, we have undertaken to organize a team of doctors in each of about 200 hospitals who will be available in the event of enemy action, to establish and staff the emergency base hospitals which would be necessary, and also to provide medical care for evacuees.

The war has brought with it very, very large tasks. With the growth of industry naturally industrial hygiene has become accentuated.

We are cooperating with the states in the matter of venereal disease control. As you know, under the provisions of Title VI of the Social Security Act, the provisions of the Venereal Disease Control Act, grants of monies are being given to states in connection with their regular health programs. Those programs have been adapted very materially to meet the war needs and emphasis has been given to the increased problems which have arisen in the war industry and in the military areas. Congress has given us additional funds under the title of Emergency Health and Sanitation with which we are carrying out a very substantial number of activities in the control of communicable diseases and providing basic health services in and around the cantonments.

With the beginning of the national emergency we undertook to make detailed studies of health conditions in each of these war areas as they developed. Those studies furnished the basis for the appropriations of the Congress for community facilities under the Lanham Act. We have just completed the seventh of such survey of health and medical needs in the extramilitary war and industrial areas, a total of 410 such areas into which some 5,700,000 people have moved. These surveys specify the needs for water supplies, for sewage disposal provisions, for hospital facilities, health centers and housing requirements.

Senator Pepper: Doctor, could you give us the summaries of the requirements that you found by that survey? *Dr. Parran:* I shall be glad to, Senator, very glad to insert it in the record.

Senator Pepper: If you can, I would like to have you read off at least typical ones, for example, housing. *Dr. Parran:* Housing requirements?

Senator Pepper: Yes, if you have got that in Army districts, or by some sort of geographical units. *Dr. Parran:* It is by individual areas and service units. With your permission I will give you the total. The housing units authorized in this area are 293,422.

Senator Pepper: What area is that now? *Dr. Parran:* In 410 areas which represent the major war industry and extramilitary areas. We have not included in this the large metropolitan centers, thinking that by their largeness they are able to take care of the increases in population, but we have included such places as Norfolk, Virginia, and on down to smaller size communities. *Senator Pepper:* Will you give that figure again? *Dr. Parran:* Units authorized 293,422, and the additional units required 603,000.

Senator Pepper: To accommodate the migratory workers that are expected in those several areas? *Dr. Parran:* Those who have come or it is expected will come.

Senator Pepper: That is necessary, in your opinion, by your survey, in order to afford adequate housing conditions to those people? *Dr. Parran:* Yes, sir.

Senator Pepper: That relates primarily to adequate housing conditions just for the war workers, does it? You did not go back and pick up the civilian population and analyze the situation existing in those communities and think about lifting the local population up to adequate housing standards? *Dr. Parran:* No, this is new housing which is needed to take care of the people who are expected to come in or who have already come in. In the matter of hospital facilities, for example, these communities have 176,165 beds now. Additional beds already recommended by the Public Health Service under the Lanham Act, 20,493; additional beds needed, 14,242. The standard or the yardstick used in connection with this estimate is 4½ hospital beds per thousand of the population.

Senator Pepper: Do those hospital needs relate to the war workers or to the whole population of the area you analyzed? *Dr. Parran:* This is to bring up the ratio of hospital beds to 4½ beds per thousand of the total population. We found it very difficult to separate out the needs for hosiptals for one group of the population and another.

Senator Pepper: What percentage of the population would you say the survey covers? *Dr. Parran:* There have moved into these areas, as I have said, 5,700,000 people. The normal population of these areas was 54,000,000 people, so it is slightly over a 10 per cent increase in population.

Senator Pepper: That survey then relates to the provision of hospital facilities for some 60,000,000 people? *Dr. Parran:* Essentially.

Senator Pepper: Out of a total population of 130,000,000? *Dr. Parran:* Yes.

Mr. Weber: General, out of the 20,000 that have been recommended by the U. S. Public Health Service, what number have actually been provided? *Dr. Parran:* Twenty-thousand hospital beds, total hospitals 334, estimated cost $64,500,000. Number of projects recommended by the Public Health Service—the dates are a little different. This was as of October 1: 290 hospitals; approved by the President 218, number under construction, 51, number of projects completed 2.

Mr. Weber: And how many beds actually have been added? Do you know the number? *Dr. Parran:* Only two hospitals had been completed as of the date of this tabulation, which is about a month old. I do not recall the number of beds in those two projects.

Senator Pepper: Doctor, you mean since when? *Dr. Parran:* That is under the Lanham Act.

Senator Pepper: When was the Lanham Act passed, do you recall? *Dr. Parran:* I forgot the date of the first act, but I think it was in April 1941.

Mr. Weber: There have been several acts, Senator.

Dr. Parran: Additional appropriations and authorizations.

Senator Pepper: Yes, I know. They come through this committee. What I was trying to get at was the period of time in which this has been accomplished. I mean, does it mean that the whole war construction program has produced two hospitals completed so far? *Dr. Parran:* That is what the record shows.

Senator Pepper: And those two hospitals have how many beds? *Dr. Parran:* I do not have the figure as to the number of beds in them. Fifty-one additional projects are under construction.

Senator Pepper: Fifty-one additional projects are under construction? *Dr. Parran:* Yes. This program has moved ahead very slowly, Senator.

Senator Pepper: Is that because the health conditions have deteriorated very slowly or the need was very small? *Dr. Parran:* The need was great, but initially the hospitals asked for beds, the construction of the usual character involving frequently much critical material, and then as the situation got tighter regarding materials they were trimmed down, they were asked to revise the plans to provide only for temporary construction. The War Production Board has reviewed the project. As you know, the responsibility for administering the Act is under the Public Works Agency, and in addition the War Production Board has reviewed the applications as to the critical materials. In some instances we have revised our original recommendations to provide fewer beds and the cheaper type of construction, using less critical materials.

Mr. Weber: General, do you anticipate that those fifty-one projects now under construction will be completed in the immediate future? Have any of them been stopped by Mr. Nelson's order to the Federal Works Agency? *Dr. Parran:* I am not sure. I cannot answer your question. Perhaps some member of my staff who is here will be able to give you that answer.

Senator Pepper: You can have them come up and sit with you, Doctor, if you like. *Dr. Parran:* We do not have the information. They were stopped in the sense that the War Production Board refused initially to approve the original request or requests which involved more permanent types of construction using structural steel and other critical materials.

Mr. Weber: So the whole program has been delayed because of shortage of critical materials, and now that the estimates have been revised you do not know whether the projects now under way will be completed? *Dr. Parran:* The Public Health Service part is only to review and survey as to the nature and extent of the unit in reference to hospitals, public water supplies, sewage systems, health centers, and a few garbage projects.

Senator Pepper: Doctor, would you not consider that the War Production Board would consult the head of the Public Health Service or some other medical agency before they stopped the hospital program, or have they become directors of health as well as critical materials? *Dr. Parran:* It has not worked out the way you indicate, Senator. When a large number of projects had been recommended by us and approved by the President, and contracts had not yet been let, the War Production Board issued a general order regarding all kinds of construction. It was not that they were singling out hospitals, but it had to do with all kinds of construction for which they were trying to save critical materials. The situation seems to have gotten tighter and tighter, as you know.

Senator Pepper: The hospitals were caught in that blanket order? *Dr. Parran:* The war supplies were caught in that order.

Senator Pepper: Did the War Production Board sit down with you and ask what you thought were absolutely essential health requirements and how narrowly they could carve it down to the bone? *Dr. Parran:* No, but I assume they had our certifications which went to the Federal Works Agency and were contained in the individual documents.

Senator Pepper: Are they doctors in the Federal Works Agency? Are they medical men? *Dr. Parran:* We act as medical health advisors to the Federal Works Agency.

Senator Pepper: So the point is that the material people decided the medical question of how many hospitals there ought to be in the country? *Dr. Parran:* I would not quite say that. I think they decided how much steel could be spared from ships, tanks and other war weapons.

Senator Pepper: And how many lives could be sacrificed by inadequate hospital facilities in gaining that much critical material? Is not that essentially the question of balance of interest, what are you going to pay in public health for the things you gain in battleships, airplanes and tanks? It is a balance of interest. It is strange that no medical authority has been taken into the council in the determination of that question.

Mr. Weber: General, could I ask if you have the figures there on housing units that have been completed? I think you mentioned over 200,000 had been authorized as against an additional need that you estimate is over 600,000. How many of those 200,000 that have been authorized have actually been completed? *Dr. Parran:* I do not have that figure, Senator. I know, continuing my general testimony that the Service pointed out the needs for additional water supplies, sewage disposal, and in some instances health centers.

Senator Pepper: Can you give us the same summaries for that, Doctor? *Dr. Parran:* Yes. Public water supplies costing $36,900,000, serving 3,394,000 people. Additional capacity in gallons per day, 1,800,000, costing $36,900,000; a distribution system serving a population 3,900,000 costing approximately $50,000,000.

On sewage disposal, additional population to be served 3,900,000 at a cost of approximately $60,000,000, and treatment facilities costing $57,000,000. Our estimates, I should say, in reference to sewage treatment, have needed to be revised downward. At the present time, we are not recommending the construction of sewage treatment plants unless a nearby water supply would be very seriously threatened, and that while a desirable health measure we felt it was one in which we could lower our standards for the duration in order to save on materials.

Senator Pepper: Does that complete the summaries of the survey? *Dr. Parran:* Yes. We have made an estimate that these communities need to spend for general public health approximately $1 per capita. They are spending now approximately one half that amount. That about completes the information.

Mr. Weber: General, would it be fair to say that these estimates of needed community facilities are unrealistic today in the face of material shortages? That is, you are able to show on the basis of migration of over 5,000,000 persons to urban areas having 54,000,000 persons, that a certain number of community facilities, sewage disposal plants, housing units, hospitals, and so on, should be erected, but in actual fact, despite the appropriation of funds, those facilities have not been constructed in the main. *Dr. Parran:* That is right.

Mr. Weber: There is no assurance—in fact, it appears that they will definitely not be constructed because of the orders of the W. P. B. and because of the shortage of raw materials. Would that be a fair statement? *Dr. Parran:* Yes. All of us are trying to get along with the least possible. In some instances, a water supply would be seriously threatened if sewage treatment were not provided, and those projects are receiving the approval of the War Production Board. In connection with water supplies, we revised downward our original estimates. The figures which I have given you represent what we think are the essential needs now in the light of present conditions.

Mr. Weber: It has been stated that in the field of housing we may face rationing fairly shortly in certain critical communities. Would it be your opinion that since it is not likely that the new community facilities will be constructed, that some methods of distributing or obtaining adequate community services will have to be worked out in regard to hospitals, water supplies, and so on? Is there any study being made in types of rationing or into the methods of distribution of those facilities? *Dr. Parran:* Yes. As regards housing, last January, before the United States Conference of Mayors, I recommended compulsory habitability in these war areas as a means of rationing housing. The hospitals are being rationed now in the sense that patients who have operations that can be postponed are not taken, and the length of time that a patient stays in the hospital has been reduced sharply. In many instances obstetrical cases are sent home by ambulance after two to five days following the delivery, if the case is a normal one. That type of rationing is being practiced.

Mr. Weber: That type of rationing already exists here in the District, does it not? *Dr. Parran:* Yes.

Mr. Weber: Particularly in regard to obstetrical cases? *Dr. Parran:* Yes.

Senator Pepper: Now, when you were given the directive or the general admonition to make these surveys you were told, as I understand you, only to investigate those areas in which there have been migrations of war workers and what the additional need of the several communities into which such migrations came were because of the war. *Dr. Parran:* Yes.

Senator Pepper: Now, did you contemplate in your survey bringing the level of the general population in housing and health facilities up to the standard that you think it ought to reach, or did you deal just with these migrations, providing physical facilities to take care of the migrations? *Dr. Parran:* More than that, especially in communities where the ratio of

population was relatively small in comparison with the total. The financial arrangement as to what proportion a city would pay and what proportion is borne out of the Lanhan Act is handled entirely by the Federal Works Agency.

Senator Pepper: So, you were confined in your survey to about 54,000,000 people, to communities housing about 54,000,000 people out of the 130,000,000 people. In the first place, you were kept out of areas where there was no war work going on, and you were supposed to bring up community facilities where migrations occurred only to a level that would take care of the new people that come in? *Dr. Parran:* Essentially that.

Senator Pepper: Now, I assume you were aware of the probable shortage of materials and the like when you made your recommendations; and that you probably made them on a conservative basis at that time, did you not? *Dr. Parran:* Well, the service, maybe more than a year ago, a year and a half ago, before we realized what this war was going to be like, did make recommendations in certain instances for sewage treatment plants which we would not make today. We have tried to adjust our recommendations to the deepening war situation, and of course the scarcity of materials.

Senator Pepper: You recommended the number of hospitals that you thought were the minimum required? *Dr. Parran:* Four and one half per thousand population, yes.

Senator Pepper: Which made a total of 290 that you recommended? *Dr. Parran:* Two hundred and ninety have already been recommended, yes.

Senator Pepper: You recommended 290 and the President approved 218, and only 2 have been finished so far? *Dr. Parran:* Yes.

Senator Pepper: And it is doubtful as to whether the rest of them will be completed at all? *Dr. Parran:* Fifty-one are under construction, and many of them are well towards completion. That is, I think it is likely that the total 218 will be constructed. Most of them are cantonment types of buildings and are for the areas most urgently needing hospital beds.

Senator Pepper: If only the 2 that are now completed are to be added to the facilities which existed when the war started, would you say the number was adequate? *Dr. Parran:* By no means.

Senator Pepper: If only the 51 that are in process of construction are completed, will they be adequate or inadequate? *Dr. Parran:* In order to provide the minimum adequate number of beds in these areas we think that a total of 34,000 beds should be constructed. Of those 20,000 have now been authorized and another 14,000 are recommended.

Senator Pepper: That is the minimum, in your opinion, that should be required? *Dr. Parran:* Yes.

Senator Pepper: What would be the effect of that minimum that you have recommended not being met in construction? *Dr. Parran:* A continued rationing of the beds with what we have, the best use of the available hospitals.

Senator Pepper: What will be its actual effect in terms of taking care of the people? *Dr. Parran:* Much less good medical care. It is difficult to forecast in terms of death rates and sickness rates.

Senator Pepper: Isn't it probable that that will reflect itself in more deaths, a higher rate of sickness and more incapacity on the part of those war workers who turn out war material? *Dr. Parran:* One would assume that certainly would be the case. But just the exact measure of it, I would not be prepared to say. On the other hand, Senator, I think all of us realize someone has to balance the need of hospitals up against the need for another tank or another ship.

Senator Pepper: Who is doing that now? *Dr. Parran:* I assume that is the responsibility of the War Production Board.

Senator Pepper: Are they doctors? *Dr. Parran:* No.

Senator Pepper: Have they made an estimate as to where that balance of interest would be by consultation with any medical authorities that you know? Have they appraised the probable effect of denying these hospital facilities to the communities upon the people and upon the production program? *Dr. Parran:* I cannot answer that.

Senator Pepper: Go ahead, Doctor. *Dr. Parran:* We have attempted to increase the number of nurses available in the country under appropriations given by the Congress. In 1940 there were about 35,000 nurses entering training schools, and in 1941 about 45,000 and this fall about 55,000.

In addition, we have just recommended to the hospitals of the country that they shorten their period of training nurses, and specifically that after the end of two years' training the student nurses be moved out of the nurses' dormitories, therefore making room for additional one-third students who can come in and start their training. This has been supplemented by a very active program carried on by the Red Cross under which 50,000 nurses aides are being trained this year, and 100,000 trained next year. Moreover, the Red Cross has given instruction in home nursing and the care of the sick to some half million people this year, and they hope to increase that to a million next years. The Public Health Service has undertaken to help the states in a number of ways, not only by grants of money but by the recruitment and assignment of doctors, engineers, nurses and other technicians, especially laboratory technicians. At the moment some 705 such people have been assigned for general health work, 50 for industrial hygiene work, and 574 for venereal disease control work.

Senator Pepper: Doctor, let me interrupt you. Take the nurses you are now describing, how many nurses are there in the country? *Dr. Parran:* It is awfully hard to count them. About 300,000.

Senator Pepper: Have you made the survey of the number that are needed in the country? *Dr. Parran:* Yes.

Senator Pepper: How many? *Dr. Parran:* The armed forces need approximately 30,000 nurses, additional nurses.

Senator Pepper: Is that as a result of the survey you made? *Dr. Parran:* No, sir, that was reported by them.

Senator Pepper: You mean they say they need 30,000? *Dr. Parran:* Yes. The hospitals of the country report approximately about a 30 per cent shortage in their ward nurses. That is not a reduction under the number of last year or the year before, but the increased patient load has brought the need for additional nurse service. Essentially we think all nursing needs will be met.

Senator Pepper: As to the actual number that you need? *Dr. Parran:* Yes. The needs will be met by the training in the nurse training schools of 65,000 to 70,000 new students next year, and 55,000 to 60,000 this year. That we think will supply the number of nurses needed, especially if their services are supplemented with nurses aides and less well trained people. At the moment, hospitals are using one trained nurse to 1.8 less well trained persons. In Great Britain they are using one trained nurse to four nurses' aides, less well trained.

Senator Pepper: Then, we are not adding but about 75,000 to the number of nurses in the country this year? *Dr. Parran:* That is approximately the amount.

Senator Pepper: And the training program is still a minimum of two years? *Dr. Parran:* Yes, but during the second year especially those nurses render ward service in addition to their training.

Senator Pepper: Is that 75,000 that we need for this year to be in training? *Dr. Parran:* I think so. In the first place, that is all that can be admitted and housed and given some instruction, and, moreover, with the competition of war industries of our women power it is going to be difficult to get more nurses than that, I anticipate. I shall feel very fortunate if we are able to step up the numbers to the quotas that I have mentioned.

Senator Pepper: Are those ladies getting anything while they are in training? *Dr. Parran:* Frequently they pay tuition.

Senator Pepper: You mean the nurses pay tuition for their training? *Dr. Parran:* Yes.

Senator Pepper: Well, apprentices in the factories do not pay tuition, do they? *Dr. Parran:* I think not.

Senator Pepper: Is there any reason why the nurses that are needed in the national defense have to pay tuition for their training? *Dr. Parran:* We have made available tuition to any prospective student nurse who is certified to us by the hospital as needing tuition.

Senator Pepper: What about the upkeep of that nurse while she is taking the training? What is she going to live on? *Dr. Parran:* The whole system in the nurse setup in the past has been very chaotic.

Senator Pepper: That is not what I am concerned about, what the system has been in the past. Let us forget what the past has been, Doctor; but let us consider what the United States of America now needs and then how well we have met those needs. If there are 75,000 nurses needed this year, or 100,000 nurses, then would not it be the duty of the Public Health Service to get the nurses in and get them in training and provide for the means of their upkeep while they are in training and then place them so they can best serve the population? *Dr. Parran:* We are attempting to do that under an appropriation with which we are aiding some 265 hospitals in giving a basic nurse training course at a cost of about $350 per nurse.

Senator Pepper: That does not include housing and subsistence for the nurse? *Dr. Parran:* Except where the nurses need it.

Mr. Weber: How many hospitals have actually filed, and for how many nurses, requests that their tuition be paid? *Dr. Parran:* Of the $350, which is the average cost to the federal government for training a nurse, I would estimate that

one third of it is for tuition and the additional amount is for the added cost to the hospital for the instruction to the nurse.

Mr. Weber: Doctor, do you know how many nurses actually in round figures have been assisted? That is, we have a Federal subsidy for the NYA trainees, but we have no Federal subsidy for nurses. *Dr. Parran:* Twelve thousand nurses up to date, divided as follows: 9,200 new students, advanced training to 1,800 nurses, refresher courses to 1,000 nurses.

Senator Pepper: Have the hospitals been recruiting the nurses of the Public Health Service? *Dr. Parran:* The hospitals have been recruiting the nurses.

Senator Pepper: Pursuant to directions by the Public Health Service? *Dr. Parran:* Pursuant to plans jointly worked out with the training schools and ourselves.

Senator Pepper: Suppose the Public Health Service said we ought to have an additional 150,000 nurses, and suppose the Public Health Service itself made the assignment or sought to recruit that 150,000 nurses, and suppose that those nurses were given enough money to provide for their subsistence and their tuition while they were in training, and then suppose that they were placed by the Public Health Service in institutions and in such places as they could get their training, do you think that the number needed would be available from the women population of the country? *Dr. Parran:* A limiting factor, Senator, is the housing facilities in the nurses dormitories.

Senator Pepper: As you said awhile ago, nurse training had been recommended in the hospitals of the country. What about the home, private service? What about that method of training? *Dr. Parran:* That method is being used in some instances, and can be extended still further. I think the nurse situation will be reasonably well met, will be adequately met if the nurse training schools will put their student nurses on a salary after the end of twenty-four months and move them out of the dormitories, thereby making available one third of the space now in the dormitories.

Senator Pepper: You said that the hospitals will do that. Have you got any assurance that they will do that? *Dr. Parran:* They are being pressed very hard, too, and I am hopeful most of them will, but there is no compulsion as far as the federal government is concerned.

Senator Pepper: Is it right to be hopeful in a national emergency in respect to the provision of adequate nurses to serve the population? Do you lack the funds, or do you lack legislative authority to do what is necessary to protect the public health of the country, Doctor? *Dr. Parran:* I should like to see whether or not the nurse training schools undertake this program on a voluntary basis before being willing to recommend that the federal government itself take over the training of nurses. It is not as simple as training other people, because the training school is integrated with the hospital, it is difficult to separate that from the other, as you know.

Senator Pepper: The federal government has taken over the training of soldiers, and it has taken over the training of certain war workers, has it not? It has provided training facilities for apprentices of one sort or another. Is there any reason why the federal government is not equally concerned about the health of its citizenry? *Dr. Parran:* I think the federal government is doing as much in terms of the individual nurse student as it is in reference to any of these other sectors, Senator.

Senator Pepper: You are satisfied then that the program upon which you are working now adequately serves the needs of the American people? Are you willing to state that, Doctor? *Dr. Parran:* Yes, if the program we have outlined to the hospitals is carried out I think there should be no shortage of nurses.

Sentor Pepper: Is that in relation to the needs of the people? *Dr. Parran:* Yes.

Senator Pepper: So, if you were outlining an ideal program to protect and preserve the public health of the United States you would not add to the number of nurses that are now being trained under your present program? *Dr. Parran:* That are now being trained and the number that are now being trained under the accelerated plan that I have described.

Senator Pepper: Well, we are nearer perfection then than many of us have thought. *Dr. Parran:* The nurse training centers have stepped up their enrollment, as I said, from 35,000 to 55,000. A great many inactive nurses have come back on duty; a great many married nurses who have not been practicing are doing nursing work. The needs are being met in these several ways.

Senator Pepper: Have you examined the situation in a lot of Southern counties to see how many nurses are available to the population of whole counties in this country? *Dr. Parran:* We have a survey of the nurses of the country broken down by counties.

Senator Pepper: Are not there many counties in the United States where there is not a single accredited nurse? *Dr. Parran:* Yes. I am not sure that there are many such counties.

Senator Pepper: Doctor, do you know that in the state of Florida, in some counties over half of the child deliveries are by midwives and not nurses? Would not a nurse be better to perform even that function than an ordinary midwife, or is a county that has no nurse in it or one nurse in it adequately served by nurses in the United States? *Dr. Parran:* No, it is not, Senator; but you think in these days we have got to do, as you described, arrive at a balance of interest as between the total amount of manpower that we have for one or another job? We haven't felt that in these days it was possible to develop for the whole population the sort of ideal health program which some of us have envisioned. I do not believe there is equipment, and there are certainly not the doctors available to carry out such a program. However, I think many needs are being met by people on a voluntary basis in ways that we had not envisioned before the war, as the self help in nursing, for instance, one family help to nurse another.

Senator Pepper: In what you said, did you indicate that you are assuming the functions of Mr. McNutt in the distribution of manpower among the various needs of the country? *Dr. Parran:* No. I figure I am only one small claimant for manpower, Senator.

Senator Pepper: I did not ask you a minute ago whether you thought we could afford to give the people all the nurses they need, I asked you how many nurses the country needed to preserve the health of the country. You said we did not need any more. *Dr. Parran:* I said some 75,000 additional nurses.

Senator Pepper: Then, you tell me there are a lot of counties where there are no nurses at all, or maybe 1. Of course, that is pitifully inadequate. Yet you submit with some sense of futility, some sense of frustration, that they could not be given the number they ought to have. I would like to know whether you are testifying about what you think the government can afford to do in the sense you are representing the government or whether you are testifying from your knowledge of the needs of the country? I am not asking you what the governmental policy ought to be, we are trying to determine that here in the legislative branch of the government. What we want to know is what are the needs of the country, and whether those needs are ever met will have to be determined by some authority or agency that will divide the nurses between the sickroom and factory and school, because it is the people we are dealing with right now, that is, the over-all needs. We are vitally concerned as to whether the public health is being sacrificed to some other need. Now, we are relying very heavily on you to be purely a reporter of the facts about the people of our country and their health, and their health needs. Now, in what way, if any, does the work of the Public Health Service tie in with that of the Procurement and Assignment Service? *Dr. Parran:* The Public Health Service does not offer commissions to any doctor who has not been cleared by the Procurement and Assignment Service as being not essential.

Senator Pepper: How is the Procurement and Assignment Service operated? *Dr. Parran:* You mean in reference to the Public Health Service?

Senator Pepper: How have they gotten doctors? *Dr. Parran:* They have made a census of the doctors of the country. They have asked the states to report, and the localities to report upon who are essential and who are not essential.

Senator Pepper: Now, who makes that survey? *Dr. Parran:* The Procurement and Assignment Service with its regional and state committees.

Senator Pepper: That was not made by the American Medical Association? *Dr. Parran:* Initially, the American Medical Association made a survey, and more recently the Procurement and Assignment Service, itself, made another survey.

Senator Pepper: Dr. Lahey, the present chief of the Procurement and Assignment Service was formerly President of the American Medical Association? *Dr. Parran:* Last year.

Senator Pepper: I assume the other members of the board are members of the American Medical Association. Now, as matter of fact, has the Procurement and Assignment Service determined the need of the Army and Navy for doctors that they recruited? *Dr. Parran:* Not so far as I know.

Senator Pepper: Have you passed on the directives that have been issued by the Army and Navy to the Procurement and Assignment Service? *Dr. Parran:* No.

Senator Pepper: So far as you know, nobody has represented the public in the decisions made as to the number of doctors needed by the Army and Navy? *Dr. Parran:* Presumably the medical department of the Army.

Senator Pepper: They are in the Army, are they not? They are representing the Army and Navy, you would assume, would you not, Doctor? *Dr. Parran:* Oh, yes.

Senator Pepper: So, the public, so far as you know, has not been taken into consideration in the making of their plans about the needs of the Army and Navy, in the directives that have been issued to the Procurement and Assignment Service. Now, would you have approved, had it been submitted to you for determination, the South Carolina situation, for example, which already had one doctor to 4,100 people, contributing 170 per cent of its quota as weighted and determined by this Procurement and Assignment Service to the armed services in relation to the doctors? *Dr. Parran:* No. I think the Procurement and Assignment Service should have intensified its recruiting efforts in the states where there was a larger surplus rather than in the states which you say had a low ratio of doctors to the population and that ratio has gone down even more.

Senator Pepper: And in some instances they took more than 200 per cent of their quota. *Dr. Parran:* I understand that is the case, yes, sir.

Senator Pepper: Does the Public Health Service now have adequate data concerning the health needs and available medical facilities for the civilian population? *Dr. Parran:* We have information concerning the war areas in general.

Senator Pepper: Only the war areas? *Dr. Parran:* Chiefly in the war areas.

Senator Pepper: And the proportion of the whole population, that is, the number of people in those areas is estimated to be about 54,000,000 of the 130,000,000 of the country? *Dr. Parran:* Yes.

Senator Pepper: So, even during the war you have not been given a directive to develop a national public health program, you have only been given a directive to provide certain additional facilities for migratory labor engaged in war work in certain communities of the country? *Dr. Parran:* Yes.

Senator Pepper: Do you think that allocation of medical personnel between military services and civilian work should have been handled through the Public Health Service rather than through the Procurement and Assignment Service? *Dr. Parran:* I think the present arrangement is the best. As a matter of fact, after seeing the system as it was set up in Great Britain eighteen months ago, I discussed that system with the Health and Medical Committee and others, and perhaps was responsible to some extent for a separate group representing the medical and dental professions being set up to deal with this problem.

Senator Pepper: You mean that system that ignores civilian needs for medical services is the best of all, in your opinion? *Dr. Parran:* No, the Procurement and Assignment Service has the responsibility, under the executive order creating it, of considering the needs of the civilian population as well as the military, to seek to secure doctors for military service with the least damage to civilian health and medical care.

Senator Pepper: So far then they haven't performed their duty if they have neglected to protect the civilian population in that recruiting? *Dr. Parran:* The Procurement and Assignment Service itself frequently has not been the recruiting agency. The Army sent into fields all over the country a large number of men who recruited doctors directly without reference to the Procurement and Assignment Service.

Senator Pepper: They were looking after the needs, of course, of the armed services. *Dr. Parran:* Yes.

Senator Pepper: So, the system to date, as a matter of fact, is that there has been the Procurement and Assignment Service carrying out the directives of the Army and Navy, and the Army and Navy have been doing their own recruiting but nobody has been sitting in on the decision as to the number of doctors needed in the armed services so as to protect the civilian population. That is a fact, isn't it? *Dr. Parran:* Certainly there has been a very active recruiting.

Senator Pepper: But nobody has been sitting in on their councils in determining the number of doctors needed so far to protect the civilian population. *Dr. Parran:* The Procurement and Assignment Service itself has attempted to limit the number of doctors going from certain areas, but they have found it very difficult to do, Senator. As you know, it is a voluntary group. We do not have a national service act, and in the absence of it it is pretty strong medicine to say to a doctor, "You may not bear arms for the country because you are one doctor for 4,000 people in the community." That is no responsibility on which he will agree. We may need to come to that. On the medical front the time may have arrived, I do not know. I do know there is a serious depletion of medical manpower in certain areas. With your permission, I should like to give you some examples of areas where the number of doctors is all too few.

Senator Pepper: I realize that. I started to say, is it not a fact that actual pressure has been put on a lot of doctors to make them come into the service with the threat that they would be drafted if they did not come into the service? *Dr. Parran:* That is true.

Senator Pepper: I had a letter yesterday, which I sent to Dr. Lahey for investigation, in which I was informed that a very competent doctor and surgeon, a physician and surgeon, had been injured while operating a tank. They put him in a tank corps. That may or may not be a question of fact, but I understood yesterday the testimony to be that some doctors had been taken in as privates by the Selective Service System.

Mr. Weber: Doctor, may I ask you a question there? The committee has been told that some doctors who have resisted such pressure have been drafted, have remained in the position of privates in the Army over a long period of time. Do you know whether that is factually true or not? *Dr. Parran:* I would doubt it. I would doubt that any qualified doctor is now serving as an enlisted man. Certainly, no case has come to my attention.

Mr. Weber: Going back for a moment to the question of recruiting, you say that the Army and Navy have had independent recruiting teams in the field other than the recruiting efforts made by the Procurement and Assignment Service. *Dr. Parran:* The Army has had teams in the field. The Navy apparently has been able to get a sufficient number of doctors without doing that.

Mr. Weber: So if the Procurement and Assignment Service had said to an individual, "It is better for you to stay in your community," the Army recruiting team could come to him and say, "We want you?" *Dr. Parran:* I think that has been stopped.

Mr. Weber: Do you know whether it has been stopped? *Dr. Parran:* I think I am reliably informed that it has been stopped, and was stopped some time ago. However, there is nothing to prevent a doctor in South Carolina who wants to join the Army from joining. The social pressures for young men to get into the service have impelled many people to feel that the best way to serve their country was in a military way and that makes it very difficult for any group in the state to say, "No, you cannot go." There is no law to keep such a man practicing in North Carolina or South Carolina. He can go to New York City and set up in practice there.

Senator Pepper: In view of the situation that exists in some of the counties in the South, how can you reconcile the coercive measures that have been resorted to by the Procurement and Assignment Division in cooperation with Selective Service to force doctors into the service to which you referred a minute ago? *Dr. Parran:* It seems to me that the Army and Navy needs must be met first. That is a basic thesis on which all of us have been proceeding.

Senator Pepper: By which, you mean that they are not subject to examination by anybody who has any concern for the civilian population? *Dr. Parran:* No, I am not saying that their tables of organization should not be subject to review at the cabinet level.

Senator Pepper: As a matter of fact, at the present time there is no final authority to apportion doctors between military and civilian needs? *Dr. Parran:* No, there is not.

Senator Pepper: Now, at the present time, the Army is taking in doctors at the rate of about 7.2 per thousand, and the Navy at the rate of about 6.5. *Dr. Parran:* So far as I know, the Army has not made public its ratio of doctors to strength.

Senator Pepper: Well, Dr. Lahey testified yesterday to those figures here before this committee. *Dr. Parran:* Yes.

Senator Pepper: Now, if that rate is continued and we recruit an Army of 7,500,000 men what will happen to the civilian population of the United States with respect to doctors? *Dr. Parran:* I think, Senator, we can spare from civil practice a total of, let us say, 55,000 doctors, if we ration, if we spread the remaining doctors evenly in proportion to the needs of the population.

Senator Pepper: How many do we need for the population, Doctor? Do you mean we need 50,000 more? *Dr. Parran:* No, a total of 50,000.

Senator Pepper: How many would that be? *Dr. Parran:* About 170,000 doctors altogether in the United States. About 150,000 of them are effective doctors, they are practicing, the others have given up practice or their teaching work. In private practice there are about 125,000, that are in private practice or in the schools in full time teaching positions or in laboratory positions, in public health positions, all doctors other than those who are practicing private medical care. Now, out of those totals we find that there are 61,000 doctors between the ages of 45 and 64 of whom some 55,000 are in private practice.

There are about 8,000 women physicians. In other words, there is a pool of about 75,000 doctors ineligible for military service that consists of women, or men over 45, and doctors with physical disabilities.

Senator Pepper: You mean there would be about 75,000 left after the Army has the 50,000 to which you referred? *Dr. Parran:* The 75,000 ineligible because they are women, because they are over age, and because they have physical disabilities.

Senator Pepper: Would that number be adequate to serve the civilian population, in your opinion? *Dr. Parran:* No, but out of the total of 170,000 doctors in the country, I think we could spare around 55,000.

Senator Pepper: That would leave 120,000 or 125,000 doctors altogether? *Dr. Parran:* Yes.

Senator Pepper: That would include all the disabled and partially defective, of course? *Dr. Parran:* That is right, that would give us a ratio of 1 doctor to about 1,500 people.

Senator Pepper: And in your opinion is that an adequate number? *Dr. Parran:*. I think we can get along with that number if their services are available evenly.

Senator Pepper: That would require a distribution of the doctors over the country which is not now the case? *Dr. Parran:* That is right.

Senator Pepper: It would require rationing of medical care and hospital facilities, would it not? *Dr. Parran:* Yes.

Senator Pepper: And it would put medical service on the basis of need and not on the basis of ability to buy, would it not? *Dr. Parran:* That might follow, but not necessarily.

Senator Pepper: So if that number were taken away and we had only the number you mentioned left, in order to give the country any sort of adequacy of service, all those conditions would have to occur? *Dr. Parran:* Unless the conditions of even availability of medical service in relation to the needs of the population were met, there undoubtedly would be many places where there would be inadequate medical care, as there are today.

Mr. Weber: General, just on that point, we know from normal occurrences in peacetime we are not going to obtain an even distribution of those 75,000 doctors without central direction. Now, the question is, just to give you an example, the question of giving some income security to doctors in rural areas. *Dr. Parran:* That is true.

Mr. Weber: It is a question of rationing hospital facilities, a question of seeing to it that the industrial worker gets the services, let us say, first of the doctors that are available. All these steps to obtain a distribution of health services and facilities are going to require central direction. Are you prepared to recommend a national health program involving all of these aspects? *Dr. Parran:*. I am not prepared now to recommend the compulsory allocation of doctors in advance of a national service act. I think there are many things which happened up to now that can be done. Many of these problems which seem so complicated, as we view them in the total really break down into a multiplicity of relatively simple problems.

Senator Pepper: Like providing a doctor for one of the counties in Florida that has no doctor is? *Dr. Parran:* No, like providing a doctor and a dentist for Valparaiso, Florida, at the request of the State Defense Council. We were able to secure a doctor and dentist. They appointed them in the Public Health Service and assigned them there. Similarly we have assigned two doctors to the State Health Department of Virginia, for service in an emergency clinic, in a hospital in Norfolk. It is not always just getting a doctor, it is getting a particular kind of doctor. Maybe an orthopedic surgeon is needed in Vallejo, California, or again a pediatrician is needed somewhere else.

Senator Pepper: What about South Carolina where there was one doctor to 4,500 people in peacetime and now there are many fewer doctors than that? What about that situation? *Dr. Parran:* If the State Health Department of South Carolina says to me that we need one or more doctors to properly protect the health of the people in one or another area in the state, we are prepared to recruit such men, put them in our reserve and assign them to this work, just as we assign doctors on the staff of venereal disease clinics, to operate immunization clinics, child nurse clinics, and so forth.

Mr. Weber: The initiative depends on the state, it does not depend on you or the federal government? *Dr. Parran:* On our own initiative we investigate the situation and give the state the information as to what the situation is. I am inclined to think that many of these needs can be met. They can be met in two or three ways. In one instance, the Army might furlough a doctor back home, and from one point of view that is very desirable. He knows the people, he knows the community, and he can be available in some urgent situation.

Senator Pepper: Doctor, what is the Public Health Service doing or recommending with respect to adding to the country's supply of doctors? *Dr. Parran:* The medical schools have increased their enrolment and are operating full around the clock, as you know. If that process is continued after the war, I think we shall very probably have an adequate number of doctors.

Senator Pepper: You mean when? After the war? *Dr. Parran:* Yes, when the men come back from service.

Senator Pepper: Well, now, what is the Public Health Service doing on its own to insure a larger number of doctors in the schools? Is tuition and subsistence being offered to any men that are capable of taking medical training by the Public Health Service? *Dr. Parran:* No.

Senator Pepper: None whatever? *Dr. Parran:* None. The number of qualified applicants for medical schools, however, is about double the number admitted year by year.

Senator Pepper: You mean by that both mentally and financially qualified? *Dr. Parran:* Mentally qualified.

Senator Pepper: How about the question of the financial disqualification to serve the country as a doctor? *Dr. Parran:* Well, in medical schools, as in every institution of higher learning, there is a higher ratio of boys and girls from the upper income groups, of course.

Senator Pepper: That is the condition as it exists now, but we face a national shortage of doctors, do we not? *Dr. Parran:* We have a shortage now for military and civilian needs.

Senator Pepper: We have a shortage now for military and civilian needs, and therefore we have the greatest public need for additional doctors, do we not? *Dr. Parran:* Yes, sir.

Senator Pepper: Now, are the medical schools going to be left to their own initiative to solve that public need, or is that going to be a public responsibility which we as public officials will face? *Dr. Parran:* I do not think that is an urgent matter at the moment, Senator.

Senator Pepper: You mean getting additional doctors in training is not an urgent matter now? *Dr. Parran:* The medical schools are taking all that they can train. They have two applicants for every person admitted.

Senator Pepper: They have no more facilities for training doctors in the country, facilities that are not being employed? *Dr. Parran:* No they have not. *Senator Pepper:* You could not train any more doctors? *Dr. Parran:* Perhaps some schools could be organized, but the first results would flow from that after four and one half or five years or more.

Senator Pepper: There is no way that you could reduce the training period so as to get them qualified to render some assistance to the population? *Dr. Parran:* I do not think it can be reduced.

Senator Pepper: What is the period that a doctor must go through his training now altogether? How many years? *Dr. Parran:* Formerly four scholastic years. It has been contracted into three now.

Senator Pepper: How many more? *Dr. Parran:* One year of internship.

Senator Pepper: You do not mean he takes his academic and medical courses in four years? *Dr. Parran:* The medical course follows after either two years of college or four years of college.

Senator Pepper: How many years of medical school? *Dr. Parran:* Normally four years.

Senator Pepper: So, it is a minimum of how many years now? *Dr. Parran:* From high school? *Senator Pepper:* Yes. *Dr. Parran:* Nine scholastic years.

Senator Pepper: So, if we start now to train doctors the first one will not come out of the assembly line for nine years? *Dr. Parran:* Oh, no, there are many qualified college students who are ready to go into medical school and will be graduated after three calendar years.

Senator Pepper: After three years? *Dr. Parran:* Yes.

Senator Pepper: You cut the period of nurses down from three to two years? *Dr. Parran:* Yes.

Senator Pepper: There has been no reduction in the period of the doctor's training? *Dr. Parran:* Not as yet.

Senator Pepper: You do not think in an emergency it will be possible to diminish that period of training any? *Dr. Parran:* I am not prepared to answer that question, Senator. It requires a very wise balance as between numbers and quality.

Senator Pepper: I understood from Dr. Lahey or someone recently that they were putting even a good many civilians into a good many places of administrative capacity, for example, where doctors are now employed.

Mr. Weber: Seven thousand.

Senator Pepper: Some 7,000 civilians. I mean a laymen's unit, where medical men had been put into administrative places, so they could release doctors that were in those places. *Dr.*

Parran: That is what is now being done in the general office. I am not informed as to the Army practice, but in the state health departments we are doing that, in our own service we are doing that, we are using the less trained personnel to relieve the nurse and doctor.

Mr. Weber: Doctor, as I understand it, you are going to be present at this conference on Saturday called by Dr. Lahey? *Dr. Parran:* I had a letter from McNutt saying he was going to the conference between the Procurement and Assignment Service and the Surgeon General.

Mr. Weber: What do you understand to be the function of that conference? *Dr. Parran:* I do not know.

Mr. Weber: Can we assume from your testimony this morning that you approve of the general work of Procurement and Assignment Service. *Dr. Parran:* That covers a good deal of territory. I think Dr. Lahey would be the first to say that it has not functioned with 100 per cent efficiency. I do get the impression that it is functioning better as time goes on. They are very slow in getting under way. Then, there was the urgent need of the Army for people, and the Army cut across lots of go out and recruit doctors without working through Procurement and Assignment because Procurement and Assignment was so slow.

Mr. Weber: Do you think the recruiting team method has been stopped? *Dr. Parran:* I think it has been stopped. I think it should be stopped. I would raise the question as to whether or not we should go so far as to prohibit a doctor because he happens to be in South Carolina from joining the Army.

Senator Pepper: Doctor, do you think it may not be necessary to send back some of these, for example, South Carolina doctors —back to their state? *Dr. Parran:* I suggested that as one method. I suggested also the possibility that the Public Health Service can still recruit some doctors from the areas where there is relatively a surplus and assign them for work in these communities. We are already helping the situation by assigning a considerable number of nurses, but that program can be stepped up greatly providing bedside nursing service for the people in these boom areas.

Senator Pepper: In other words, it is another case of taking the copper miners, training them as soldiers, making them soldiers, and then sending them back as copper miners again. *Dr. Parran:* If a doctor were sent back, that would be a comparable situation.

Senator Pepper: All due to the error of government policy in the beginning, not contemplating civilian needs as well as the military needs of the country. Doctor, have you got any statistics on whether or not there are any diseases that are increasing as an incident of the war? Tuberculosis, for example? *Dr. Parran:* There is tendency for tuberculosis to increase, especially tuberculosis among young women. It is a tendency that is just beginning, but in view of the experience of the last war in Great Britain, in Germany, as well as even in the neutral European countries, we can forecast very definitely a rise in the tuberculosis rate.

Senator Pepper: What are our plans for meeting that threat to the national health? *Dr. Parran:* The plans are before this committee, I think, in a national bill, to provide community and tuberculosis hospitals. Perhaps that was passed by the Senate and then died in the House here a couple of years ago.

Senator Pepper: In other words, we have the same plan that we had a couple of years ago? *Dr. Parran:* A plan of constructing additional hospitals I think will be needed, just as soon as we can get some materials.

Senator Pepper: Were those plans contemplated in the 290 hospitals you recommended, of which the President approved 218? *Dr. Parran:* No, tuberculosis hospitals by administrative definition have been excluded from the terms of the Lanham Act.

Senator Pepper: I mention that because you recall in Orlando, Florida, we have the first and the state's only tuberculosis institution, and any increase in the size of those facilities has been flatly denied until after the war. *Dr. Parran:* Yes.

Senator Pepper: So, if the 290 hospitals that you recommended are not going to be built, in all probability it is not likely that any hospitals will be built to take care of the tubercular patients, then, is there? *Dr. Parran:* Certainly, I have seen very little hope of it.

Senator Pepper: So, substantially, we do not have any plan to take care of the increased threat to national health that is coming along with the war? *Dr. Parran:* We have the plans but we have no prospect of action.

Senator Pepper: I mean any plan that offers a prospect of success. *Dr. Parran:* Yes, of accomplishment.

Senator Pepper: Doctor, have studies been made as to how the war work by war workers has been affected by public health, or the health of those war workers? *Dr. Parran:* We have very close records on the question of absenteeism from work on account of sickness and with the war drive or zeal of workers to keep up production. There has been no increase in industrial sickness as yet.

Senator Pepper: Was there already any appreciable loss from industrial sickness in the United States before the war started? *Dr. Parran:* Oh, yes, sickness causes much lost time. Recently, it was calculated that sick and injured war production workers lose 6,000,000 work days every month.

Senator Pepper: Is that important, in your opinion, to war production? *Dr. Parran:* Tremendously important.

Senator Pepper: Would it aid war production if that amount of loss could be diminished? *Dr. Parran:* It undoubtedly would.

Senator Pepper: So that the public health then has a very direct relationship to war production and the strength of the Nation, does it not? *Dr. Parran:* No doubt of it.

Senator Pepper: Have you at your fingertips, Doctor, the number of selectees that were turned down because they could not pass the physical examination for the Army and Navy? *Dr. Parran:* Approximately 30 per cent of the total were rejected. Now, some of them are being taken into service, even though they have defects which initially disqualified them.

Senator Pepper: What is the rehabilitation program that the government now has under way for those rejects among the selectees? *Dr. Parran:* The President, last October, by executive order, delegated the authority to the Selective Service System, to General Hershey, and later some money was made available.

Senator Pepper: Do you know how much? *Dr. Parran:* I do not know the amount.

Senator Pepper: Five million dollars—less or more? *Dr. Parran:* I am sorry I do not have the figures. I can furnish it for the record. All the money that has been made available I think has not yet been used.

Senator Pepper: You mean they found out that these selectees did not have these defects? *Dr. Parran:* No. They run into all sorts of difficulties. They tried the system in two states, Maryland and Virginia, and only a baker's dozen boys were finally made available for the Army.

Senator Pepper: Can you give us the figure of the total number of rejected selectees that have been rehabilitated and made available to the armed services? *Dr. Parran:* Relatively few, except those for venereal diseases.

Senator Pepper: What would be your best estimate as to the number? *Dr. Parran:* For the conditions other than venereal diseases, I should say relatively few. That does not count the boys who tried to volunteer and were turned down because of defective teeth and then got their teeth patched up on their own initiative.

Senator Pepper: Neither does it count the ones who tried to volunteer, were turned down and who did not correct the defect? *Dr. Parran:* That is right.

Senator Pepper: The number of selectees rejected for physical deficiencies was about 30 per cent of the total number? *Dr. Parran:* Yes.

Senator Pepper: Doctor, as a medical man, how many of those rejects could have been made available for the services, for the armed services by an adequate rehabilitation program? *Dr. Parran:* Somewhere between one fourth and one half, nearer 25 per cent, could be made fully fit.

Senator Pepper: At least 25 per cent of the 30 per cent? *Dr. Parran:* That is right.

Senator Pepper: Could have been, by an adequate rehabilitation program, made fit? *Dr. Parran:* That is right.

Senator Pepper: In a nation which is struggling for enough men to man its Army, its factories and its fields, isn't it in the national interest that we put into effect an adequate rehabilitation program? *Dr. Parran:* In my opinion it is, sir, yes, sir.

Senator Pepper: But except for the directive that the President gave to General Hershey and some money made available which yielded a total of only a few hundred so far, that is all that has been accomplished on this rehabilitation program? *Dr. Parran:* Yes. If I might say, plus the very substantial number of men with venereal diseases who have been treated or cured, or the disease has been arrested and thereby the men made available for service.

Senator Pepper: What has been done with reference to those selectees with venereal diseases and who have been rejected? *Dr. Parran:* They have been pulled up and encouraged, in some cases required, to take treatment. If they lapse in treatment, the Selective Service boards are notified and those boards call the men up before them. The Selective Service board actually has no authority to require one to take treatment, but under the state quarantine laws, with the substantially additional funds we have been giving to the states, a very active program has

been carried out. I have heard of some instances of boys with syphilis, who seemed to cherish a little positivity in their blood so they would not be called up by Selective Service, and even in other instances of the employer holding the same point of view, otherwise he would lose a valuable factory or farm hand.

Senator Pepper: Has the Army taken in any of these venereally affected people and given them corrective treatment? *Dr. Parran:* Yes, beginning last spring they began to take the uncomplicated cases of gonorrhea, especially those cases acquired somewhere between the local board examination and the Army induction center. More recently they have announced they will take certain types of uncomplicated syphilis as well as gonorrhea as soon as hospital provision has been made. Those hospital provisions are being made and are available and just about ready in many places.

Senator Pepper: Is it proper to ask you if you have made any recommendations about the rehabilitation of these selectee rejects, as to how they could be rehabilitated *Dr. Parran:* Yes.

Senator Pepper: Would you feel free to tell us what your recommendation has been? *Dr. Parran:* Yes. Two years ago in September the state health officers recommended to me that a law should be enacted which would make any selectee rejected because of physical defects a beneficiary of the federal government entitled to medical care, just as a certain group of the population is now entitled to medical care, merchant seamen, for example, and members of the armed forces. Later on, we participated in recommendations to the Administration which resulted in the assignment of this task to the Selective Service System.

Senator Pepper: As a matter of fact, the Public Health Service has not been given the opportunity or the duty to take care of the selectee rejects, and tried to fit them for military service? *Dr. Parran:* With the exception of the venereal diseases.

Senator Pepper: Between what ages were those selectee rejects, generally, Doctor? *Dr. Parran:* Between 21 and 30, the bulk of them.

Senator Pepper: So one of the reasons for this necessity of taking the 18 and 19 year old draftees is due to the shortage of other men in the 20's for example? *Dr. Parran:* Yes.

Senator Pepper: A number of whom might have been supplied by these physical rejects had they been properly rehabilitated? *Dr. Parran:* There are some 300,000 men who will have been rejected on account of venereal diseases. That number is being approached now. That is the total.

Senator Pepper: And then a certain additional number has been rejected on account of general deficiency? *Dr. Parran:* Oh, yes.

Senator Pepper: A quarter of whom, as you said a while ago, could have been rehabilitated by an adequate program? *Dr. Parran:* Yes.

Senator Pepper: The Army had not consulted with you, Doctor, as to how you can rehabilitate these rejects, as to whether you have a program that will achieve that result?

Dr. Parran: No, I think it is fair to say the Army has consistently been uninterested in taking the men in and rehabilitating them in the Army. Many of us have thought that that would be a very appropriate way of handling the problem. The conditioning battalions of men, for example, would be under control, while in civil life there is no control over whether or not a selectee wishes to cherish his hernia or to get it fixed, let us say.

Senator Pepper: I think all of that indicates then that the Army and the Navy, and the nation, have a very vital interest in a healthy citizenry, does it not? *Dr. Parran:* There is no doubt about it.

Senator Pepper: So the expenditure of money for the protection of public health is not an extravagant waste but it has come to be now a military necessity, has it not? *Dr. Parran:* It really has.

Senator Pepper: And when we ignore its importance we are ignoring a very vital element in our military strength. *Dr. Parran:* Yes.

Senator Pepper: Doctor, have you any recommendations to make to us as to how medical authority and money made available to the United States Public Health Service or to any other agency that is appropriate can more adequately meet the problem of the nation's health and strengthen the nation's ability to wage war? *Dr. Parran:* Senator, the most urgent needs can be met I think by additional funds for which estimates have been prepared and are now in the Bureau of the Budget.

Senator Pepper: Does that affect the whole population or just these war areas where there are only 54,000,000 people located? *Dr. Parran:* It is chiefly for the war areas.

Senator Pepper: Do the selectees, Doctor, that come on call by the Army come only from that group of communities, or do they come from the whole country?

Dr. Parran: By no means. The trouble is now, with the depletion of medical manpower, it would be almost impossible to get the doctors and dentists needed to do the rehabilitation job. Dental defects represent the largest source, and there is just not the dental manpower left in the civil population.

Senator Pepper: Is there anything being done to augment the number of dentists in training by the government? *Dr. Parran:* No, the government has not taken any position in that.

Senator Pepper: So we have got the case then, if I am summing it up correctly, of a method of procuring doctors which totally ignores a civilian population and its needs; we have got a palpable case of a great many people who are not able to serve in the armed services because of physical defects, at least one quarter of which are remedial if they had adequate medical attention; with the present shortage of doctors and nurses, except in the instance you mentioned about some of the nurses getting tuition, the government, itself, nor the armed services have launched any program that has for its objective the training of additional doctors or any appreciable number of nurses, and the hospital program that you have recommended for even the military areas that have only 54,000,000 of the population in them has so far been realized to the extent of 2 hospitals completed and 51 under construction, and it is admitted that there is an increase in tuberculosis in the country, as I understand, due to the war, and there is no effective program under way to meet that menace, and 6,000,000 man hours a month are being lost by war workers because of bad health conditions, a good bit of which would be preventable by adequate public health programs, and there is not any essential program at present under way; that is a correct statement of your summary, I believe? *Dr. Parran:* You paint too gloomy a picture on that, Senator. After all, we cannot help but compare the present situation with the past, because we move, the present of today is the past of tomorrow. Compared with the situation in the last war we are immeasurably better off in reference to public health activities and the health structure in the country. In the last war we took a few dollars from Red Cross to hire occasional nurses. Now, Congress has appropriated $11,000,000 under Title VI for the Public Health Service, $12,500,000 for the Venereal Disease Act. Our estimates for emergency health and sanitation work, including malaria, will run from $20,000,000 to $25,000,000. Congress is appropriating several million dollars for the training of nurses. We are adding hospitals in all of the war production areas and establishing blood banks. I agree much more remains to be done.

Senator Pepper: So, altogether we are approaching an expenditure of nearly $50,000,000 on those general objectives? *Dr. Parran:* Yes, around $50,000,000.

Senator Pepper: That is a little over $4,000,000 a month. *Dr. Parran:* Add to that the hospitals we hope to get. *Senator Pepper:* For 130,000,000 people. *Dr. Parran:* So that some progress has been made, and the general health conditions in the country are not bad.

Senator Pepper: You mean as compared to the past? *Dr. Parran:* As compared to the past. They are not good enough, I agree. There has been a great tendency on the part of many people, the press, to forecast an influenza epidemic. I do not think we have evidence to show that we shall or shall not have an epidemic. Certainly, one cannot say that there are any imminent signs, and yet influenza may strike without warning like a storm.

Senator Pepper: And if influenza struck without warning like a storm in a state like South Carolina which in peacetimes only had one doctor to 4,100 people and now has many less, the consequences would be very serious to the people affected, would they not? *Dr. Parran:* Yes. We have no specific cure for influenza but nursing and medical care are important in minimizing the mortality.

STATEMENT OF DR. PAUL DE KRUIF

Senator Pepper: Are you Dr. Paul de Kruif or Mr. Paul de Kruif? *Dr. de Kruif:* That depends, Senator, on the definition of "doctor."

Senator Pepper: Why do you say that? *Dr. de Kruif:* I received my Ph.D. degree in bacteriology at the University of Michigan in 1916, and I am called "Doctor" by my associates in public health and scientific work, but recently I have been demoted from my doctor's degree, and in circles high in the medical profession I am now called "Mister."

Senator Pepper: Who was it that was responsible for your demotion, Doctor? *Dr. de Kruif:* THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Senator Pepper: Who is the doctor that publishes that journal? *Dr. de Kruif:* The author is the American Medical Association itself.

Senator Pepper: Who is responsible for the publication? *Dr. de Kruif:* The editor is Dr. Morris Fishbein.

Senator Pepper: Doctor, you said you were a bacteriologist by training? *Dr. de Kruif:* Yes sir.

Senator Pepper: Will you give us a little bit of your own background and experience? *Dr. de Kruif:* Briefly, I taught bacteriology and did bacteriological research in the University of Michigan from 1912 to 1920, with eighteen months out during my service during the war as a captain in the Sanitary Corps of the United States Army. From 1920 to 1922 I was bacteriologist at the Rockefeller Institute for Medical Research. I then left the Rockefeller Institute for Medical Research and began to devote my time to medical reporting for lay periodicals. In addition to that, I have kept in touch constantly with medical scientific work. I have participated in it at the Kettering Institute of Medical Research at Dayton, Ohio, as consultant in their work in research on the treatment of syphilis, and I am now serving as assistant to the president of the Board of Health of Chicago in charge of venereal disease control activities, and I am also serving as consultant to the Michigan State Health Department laboratories.

Senator Pepper: Doctor, you have been the author of certain publications? *Dr. de Kruif:* Yes, sir.

Senator Pepper: What are those? *Dr. de Kruif:* Certain books, among them "Microbe Hunters," "Men Against Death," "The Fight for Life," and I am also a roving editor and medical reporter for the *Reader's Digest.*

Senator Pepper: Doctor, from your wide experience in observing public health in this country, what would you say about the adequacy of the medical facilities, hospitals, and doctors that are now available to the people of this country? *Dr. de Kruif:* I think they are inadequate.

Senator Pepper: What causes you to say that? *Dr. de Kruif:* I say that from my experience in investigating the situation in regard to medical care, in regard to public health activities, in regard to scientific research in respect to a certain group of disease conditions.

Senator Pepper: Well, now, what is the effect on the population of that inadequacy? A larger number of people die, a larger number of people are disabled by illness than would otherwise die and be disabled? *Dr. de Kruif:* Yes, sir. I think many, many thousands of lives could be saved, and the level of strength and health of millions of people could be lifted if we had adequate public health and medical care facilities.

Senator Pepper: Would you be willing to say that the 30 per cent of the number of selectees who were called and rejected because of physical defects might have been diminished had they had as children and citizens prior to their induction adequate medical care and attention? *Dr. de Kruif:* Yes, sir.

Senator Pepper: Would you say that the men who have been called into the armed services would have been better qualified physically as a whole had they had before they came into the service adequate medical care and attention? *Dr. de Kruif:* Yes, sir.

Senator Pepper: Would you say that the working efficiency of the nation's civilian population would be increased immeasurably by adequate medical care and attention? *Dr. de Kruif:* Yes, sir.

Senator Pepper: Well, now, Doctor, have you had any experience, or knowledge of, the method employed by the armed services now in the selection of their medical personnel? Do you know how it is done? *Dr. de Kruif:* I have heard Dr. Parran testify as to how it is done, and I have also read the testimony before this committee as to how it is done.

Senator Pepper: Well, now, did you understand that preliminary to the actual functioning of the Procurement and Assignment Service that the American Medical Association made a survey of the doctors available in the country? *Dr. de Kruif:* I do not know if they did or not.

Senator Pepper: Well, suppose it were a fact that the American Medical Association made the original survey of the doctors who are available in the country, and then the recommendations as to those who are essential in the areas where they are located and those not essential; would you consider it appropriate that a private agency of that sort should make that kind of determination? *Dr. de Kruif:* I would not. *Senator Pepper:* Why would you say that, Doctor? *Dr. de Kruif:* You understand, Senator Pepper, that I do not set myself up as an authority in this matter. I have not investigated it in a comprehensive way. As Will Rogers has said, all I know is what I read in the papers. On the other hand, I have had personal experience in a couple of situations in widely separated parts of the country which would indicate that such a procedure is not an effective one in the determination of what doctor should go and what doctor should stay.

Senator Pepper: Would you be willing to give us the details of those cases? *Dr. de Kruif:* I would be glad to. The first one that comes to mind is the situation that arose in the state of Michigan and in the city of Detroit in the state of Michigan. Since 1936 I have been in close touch with the tuberculosis program. The city of Detroit is world famous for the progress it has made in the control of tuberculosis. The work there is built around a magnificent tuberculosis hospital known as the Herman Kieffer Hospital, and when the raid on the medical manpower of the country began the staff of physicians at the Herman Kieffer Hospital was cut from 16 to 2. It has to serve about 900 tuberculous persons, and several with other communicable diseases. It was only because of the existence in Detroit of some very determined men that the number of physicians was brought back to something near adequacy in the care of the sick in the Herman Kieffer Hospital.

Senator Pepper: So in spite of the generally admitted medical impression that tuberculosis is on the increase in such areas, that it is incident to war work, here was the one effective tuberculosis hospital which had its staff diminished from 16 to 2 by this agency? *Dr. de Kruif:* I would not say the one, I would say one of the most effective in the world.

Senator Pepper: One of the most effective in the world? *Dr. de Kruif:* Yes.

Senator Pepper: And it was only by the intervention of local people who understood the situation that that condition was stopped?

Dr. de Kruif: By very tough and courageous men, certainly.

Mr. Weber: Would not it be fair to say, if the remaining 2 per cent were taken, it would have been closed. *Dr. de Kruif:* I could see no other answer, Mr. Weber.

Mr. Weber: They more or less reached what is called in Washington the bottom of the barrel. *Dr. de Kruif:* Their backs were to the wall.

Senator Pepper: Now, you said there was another case? *Dr. de Kruif:* Also in my state of Michigan, at the beginning of the raid on the medical manpower, the sanatoriums outside of Detroit, county sanatoriums, state sanatoriums were threatened with a serious depletion of their medical and technical personnel. Now, this was stopped through the intervention of a certain group of men who voluntarily went to the state committee on Procurement and Assignment and demanded and got the freezing of those men. That is in Michigan, mind you. What has happened in regard to the personnel of other institutions in the rest of the country, I do not know. I know that those institutions were seriously threatened with a depletion of their personnel.

Senator Pepper: Now, how do you account for that, Doctor, in view of the medical knowledge that is supposed to have been possessed by these men who were making these recommendations and selections?

Dr. de Kruif: I can only account for it on the ground of their not being informed as to the importance of maintaining these institutions in full function in this emergency.

Senator Pepper: Are there other cases that have come to your attention? *Dr. de Kruif:* Yes. A rather flagrant one. It so happens that I am quite well acquainted with the work of one of the leaders in the field of nutrition. This man is Dr. Tom Douglas Spies. He is the director of the Hillman Nutrition Clinic at the Hillman Hospital in Birmingham, Alabama. This nutrition clinic is not only nationally but world famous. It is the largest nutrition clinic in the United States, I think; and its work since its founding in 1936 has been outstanding both in revealing the state of malnutrition existing in the southern part of our country and also in recommending means to cope with this widespread malnutrition. For example, I am told that whereas some three out of ten men nationwide are rejected by the draft because of their physical disabilities, in certain states, Southern states and Southeastern states in particular, the figure is, I believe, something like 7 out of 10. It is very high. A part of this disability is to be ascribed to malnutrition. This clinic, the Hillman Hospital Clinic, was unique in its service to the South in regard to the nutritional status of its population. Dr. Spies was loath to join the armed forces. He is a bachelor, he is 38 years old, and consequently if you were not selecting men on the basis of their particular function but simply on the basis of their age, he would go into the Army, but he felt he was rendering the greatest possible service to his country by staying and directing the work of the Hillman Clinic. An effort was made by a person very high in authority in the American Medical Association to put the finger on Dr. Spies and get him into the Army. This was only

prevented by the intervention of outside individuals who insisted to Dr. Spies's local draft board that he should be declared essential.

Senator Pepper: In other words, it was not a case of David sending Uriah to the front because he had a wife, because this man was a bachelor, but you mean to use your phrase that they did put the finger on him? *Dr. de Kruif:* They did put the finger on him. I think that fellow who was named Uriah, was not he the Hittite?

Senator Pepper: Yes. *Dr. de Kruif:* David wanted him shot, so he sent him away to the front lines because he wanted his jane. Your analogy is strongly apropos.

Senator Pepper: You say there was an intervention in that case, with emphasis upon the importance of the work this man was doing and they were induced to desist from taking him into the armed services. *Dr. de Kruif:* Yes, sir. I think, Senator Pepper, that this case is so flagrant that it might well serve as a test case, as a kind of a Dreyfus Case, you know, to show the people of the country what kind of funny business goes on in regard to the procurement or assignment that has gone on.

Senator Pepper: So if that kind of thing occurs under the present system, you would not think the present system of procurement and assignment of doctors was a desirable system? *Dr. de Kruif:* I would say more, sir—I think you are making an understatement, I think it is odoriferous.

Senator Pepper: Doctor, so far as you know, has there been any regard, in the action and functioning of the Procurement and Assignment Service, for the needs of the civilian population? *Dr. de Kruif:* Not that I know of, sir.

Senator Pepper: I think the statement was made that if the Army and Navy were to take the number of doctors they need, there would still be enough doctors left to serve adequately the population. Do you concur in that statement? *Dr. de Kruif:* I do not think there ever were enough doctors to serve adequately the needs of the population. Maybe on Park Avenue, yes; but not in general in the country, not enough doctors nor good enough doctors. I am speaking of the ideal, and that is what we should set up as our base of reference.

Senator Pepper: There were not enough doctors in peacetime, and you mean to say then that there could not be enough doctors even if less of them were taken away for the purpose of war? *Dr. de Kruif:* That seems to me to be a simple arithmetical conclusion.

Senator Pepper: You said, I believe, there were maybe enough doctors on Park Avenue, because their medical services could be procured by people who had the money to buy it. *Dr. de Kruif:* By those who pay for it, yes, which I think is an infamous situation.

Senator Pepper: In other words, a nation engaged in total war needs to use its manpower to the best advantage in every aspect of its national life, and that if the population is to be adequately served by its doctors, the population has got to have access to the doctors on the basis of need and not on the basis of the amount of money they have? *Dr. de Kruif:* I think even more than that. The men in the armed forces are the cream of the country in regard to their health and unless they are shot or wounded they need less medical attention by far than the rest of the people of the country and consequently it seems to me to be a strange situation that the medical care should be weighted so heavily in favor of the healthiest people of the country. Always assuming, of course, that we are not going to have a battle in which a million will be wounded, or they maybe will say they will need these men in the event of a Stalingrad in this country.

Senator Pepper: Doctor, how many members are there of the American Medical Association, do you know? *Dr. de Kruif:* I would not know.

Senator Pepper: What percentage of all the qualified medical doctors in the country belong to the American Medical Association? *Dr. de Kruif:* I also cannot answer that. A very high percentage, however.

Senator Pepper: Is there any advantage to be gained by the doctor from being a member of the American Medical Association? *Dr. de Kruif:* Oh, yes.

Senator Pepper: Do you happen to know from your knowledge of the profession and of the subject what additional training programs for doctors the American Medical Association has recommended for the emergency? *Dr. de Kruif:* I do not know, sir.

Senator Pepper: The period of medical training, so far as you know, has not been diminished during the emergency, has it? *Dr. de Kruif:* No.

Senator Pepper: In your opinion, would it be possible, in the public interest, to diminish the number of years presently required for the completion of a medical course? *Dr. de Kruif:* I am not an M.D., and maybe I am not competent to state it, but I do think that there could be a speed-up, yes.

Senator Pepper: There has been a speed-up of 33⅓ per cent in the time of training required for nurses, I believe. *Dr. de Kruif:* Yes.

Senator Pepper: From three years down to two years. *Dr. de Kruif:* Yes.

Senator Pepper: And some one expressed the idea it might be compressed into one year of training. *Dr. de Kruif:* I believe so.

Senator Pepper: Let me ask you this, Doctor: In your opinion is the country likely to get all the men that could be trained with the country's facilities so long as they have to be financially able, as they now must be, to sustain themselves or be maintained by the families over a period of seven years, say, and by the expenses of tuition and books and the other school expenses in addition to that, as well as it would if a man were to be able to take medical training merely by having the facilities available and the aptitude to take the training? *Dr. de Kruif:* No, no. I think the present method of selection, according to the economic level of the parents is an infamous one and also deprives us of a great deal of talent, potential talent that exists in the boys and girls of the lower economic levels.

Senator Pepper: Roughly speaking, I wonder how much it would cost to complete the medical education of the ordinary man? *Dr. de Kruif:* You will have to get some figure on that from somebody else, Senator Pepper. I do not know how much that costs. It is a lot of money, though. It is many thousands of dollars.

Senator Pepper: Well, it would average $1,000 a year probably. *Dr. de Kruif:* That is including the maintenance of the man?

Senator Pepper: Yes. *Dr. de Kruif:* More than that, sir, I think.

Senator Pepper: If it were only $1,000 a year and it took seven years, that would be $7,000. *Dr. de Kruif:* Yes.

Senator Pepper: There is only one per cent of the population of the United States which makes an income of $10,000 a year or over, I believe. *Dr. de Kruif:* Yes.

Senator Pepper: So that a relatively small number of people have access to the medical schools of this country. *Dr. de Kruif:* Yes.

Senator Pepper: Because a relatively small number of people are able to afford the training that the professional person requires. *Dr. de Kruif:* There are some efforts at present being made to meet the situation. I know of one. There may be other ones. One is being made by the W. K. Kellogg Foundation at Battle Creek, Michigan, at present.

Senator Pepper: Is that a public foundation? *Dr. de Kruif:* No, a privately endowed foundation. There is being set aside a considerable sum of money for scholarships or fellowships for boys that need the medical education. Whether, however, that will meet the needs of the situation I doubt. I am not sure, but I do not think so.

Senator Pepper: You do not know of any plan the American Medical Association is formulating to make medical training accessible to a larger number of boys and girls? *Dr. de Kruif:* Not that I know of. So that I would not be accused of prejudice, I must say that such may exist. I do not know of it.

Senator Pepper: Well, do you not regard one doctor to 1,500 people on an average as being enough doctors for the people, do you? *Dr. de Kruif:* Not that they are being well taken care of, no, — as well as they could be.

Senator Pepper: You are sure you would not regard one doctor for 4,100 people in South Carolina as enough? *Dr. de Kruif:* I think that is a horrible situation.

Senator Pepper: And if the South Carolina doctors have been further depleted in number by giving 170 per cent of their quota as weighted by the American Medical Association, their plight is a very great one, isn't it? *Dr. de Kruif:* I would feel so, sir.

Senator Pepper: Well, Doctor, to get back to the Procurement and Assignment Service, you do not regard then that agency, as presently constituted, as qualified either by disposition or general knowledge to speak for the civilian needs of the country, or to pass on the question of the allocation of medical manpower between the armed services and the civilian population? *Dr. de Kruif:* I do not think they are qualified, sir.

Senator Pepper: Have you any suggestion as to how the matter ought to be handled? *Dr. de Kruif:* Yes.

Senator Pepper: We would be very glad to have it. *Dr. de Kruif:* I think that first there should be appointed a fact finding commission with power to investigate the result of the present depletion in those areas which have been depleted. This com-

mission should be composed of a mixed commission, maybe of a layman and two doctors who would be above suspicion of belonging to the group which consistently apologizes for the present adequacy of medical care.

Mr. Weber: What are you referring to? The American Medical Association? *Dr. de Kruif:* Yes, sir. That does not mean that these physicians should not belong to the American Medical Association.

Mr. Weber: But you would be unwilling to see the top officials of that organization to be appointed on that fact-finding body? *Dr. de Kruif:* I do not think you would get much else but a whitewash if that happened.

Mr. Weber: You said that they had offered no national health program to date in the war. *Dr. de Kruif:* Not so far as I know. Not a general national health program implemented by the federal government.

Mr. Weber: Well, health is a war question, do you feel? *Dr. de Kruif:* Your question is an understatement. What good are tanks, airplanes and battleships if you do not have the top men to man them?

Mr. Weber: If it is a war question, that means it is a national question, doesn't it? *Dr. de Kruif:* I do not think Michigan is fighting the Nazis and Japs alone.

Mr. Weber: It is a primary concern of the national government? *Dr. de Kruif:* Certainly.

Mr. Weber: Yet we have no national war health program at the present time? *Dr. de Kruif:* Not that I know of.

Mr. Weber: We have nothing but scattered individual effort by states, localities, communities, and a separate group of doctors. *Dr. de Kruif:* Yes.

Mr. Weber: Without the leading professional organization of doctors for the defense of Americans at all. *Dr. de Kruif:* So far as I know, that is true. May I give you a case in point of what might be done right now, one specific instance, instead of indulging in these generalities?

Mr. Weber: Yes. *Dr. de Kruif:* For example, at the present time many tuberculous men have been found by the screening of the selectees. They gave x-ray examinations, a chest film, and they find a large number of tuberculous boys. These are rejected, of course. Now, the finding of those boys gives us an unprecedentally powerful weapon to trace tuberculosis to its source. These boys, every one is found, his name is known, his place of residence is known, and his family is known. He has gotten his tuberculosis from somebody in his region, and when he is going back he is going to give tuberculosis to other people. So that now, if there were in a national health program a T. B. controller, let us say, a federal man, with the facilities now at hand, he could institute what is known as an epidemiological campaign, and an active treatment campaign that would enormously accelerate the decline of tuberculosis and aid in its being wiped out.

Mr. Weber: Where we find a man with a venereal disease and he is rejected they attempt to follow him up, or they do follow him up? *Dr. de Kruif*: Yes, there are some very good efforts in that direction.

Mr. Weber: And in the case of T. B. also? *Dr. de Kruif:* No. The venereal program is very much stronger than the tuberculosis program.

Mr. Weber: Is tuberculosis increasing? *Dr. de Kruif:* In certain states.

Mr. Weber: Would you mind naming them? Do you know any of them specifically? *Dr. de Kruif:* No, I will not name them now, but if you will communicate with the National Tuberculosis Association in New York, you can get a record of the cities where it is increasing, where the figures are higher in 1941—and 1940—than they have been in the past. Baltimore has been one such city, I call to mind just now. There are other ones.

Mr. Weber: How about the state of Michigan? *Dr. de Kruif:* The situation in Michigan at the present time is as follows: Detroit, because of its institution of a powerful tuberculosis program, in spite of the fact that it is the industrial high spot of the country so far as the strain upon the workers increasing tuberculosis, is actually continuing its downward trend in tuberculosis. The state as a whole is maintaining its mortality on a level. The city of Detroit is still going down, thanks to the program that was begun in 1929, intensified in 1936 and still in full progress, thanks to a few determined men.

For example, you asked how I would suggest that this thing be corrected. As a specific instance, if you would call before your committee Dr. Bruce H. Douglas, the Health Commissioner of Detroit, and Dr. E. J. O'Brien, member of the Michigan Sanatorium Commission, which has been the sparkplug, the leader, in the Detroit tuberculosis campaign, they would make recommendations to you that would thrill you, Senator Pepper, as to what could be done now.

Senator Pepper: Doctor, have your experiences led you to believe that we have been making an economical use of the nation's manpower? *Dr. de Kruif:* You mean in general?

Senator Pepper: Yes. *Dr. de Kruif:* I am not competent to judge on that, sir. I could not pass on that.

Senator Pepper: What I mean is this: We are now talking about a shortage of manpower. The fields cannot be harvested, the various factories are having their output severely diminished because they haven't the employees. We had to resort to the drafting of 18 and 19 year old boys in order to get enough men. In spite of those stringencies for manpower we have been neglecting public health, which has a direct relationship to the effective manpower of the country. Is not that a fair conclusion? *Dr. de Kruif:* Definitely so, sir.

Senator Pepper: So that a nation that did not try to rehabilitate the selectees whom it had rejected would not seem to be very much concerned about the economic use of its manpower, would it? *Dr. de Kruif:* I think that conclusion follows.

Senator Pepper: Would not you think that before a nation resorted to the draft of mothers to leave their homes and children and to work in factories that it would first try to see how many people there were, men and otherwise, that were capable of working except for physical defects and that could have the physical defects remedied so they would be effective workers? *Dr. de Kruif:* That would seem to me to be the first move to be made.

Senator Pepper: Would not it be natural to assume, before compulsion was resorted to to get people into the armed services and factories and fields, that we see how many people could be made to fit to volunteer for those various services? *Dr. de Kruif:* Yes, sir.

Senator Pepper: Then, isn't it essential, in dealing with the war manpower problem, that we deal with the nation's health, in your opinion? *Dr. de Kruif:* It would be fundamental to deal with the Nation's health, to do that.

Senator Pepper: So that any manpower program that leaves out of consideration the fullest use of the nation's facilities for protecting the public health is not a properly balanced or sufficiently comprehensive program? *Dr. de Kruif:* I feel that to be true.

Senator Pepper: This thing about the Nation's health is not just a frill or furbelow, as I understand you then, but an essential and vital matter in relation to the Nation's strength? *Dr. de Kruif:* I always put first not only essential and vital matter but the essential and vital matter in relation to the Nation's strength. May I add one thing, sir?

Senator Pepper: Yes. *Dr. de Kruif:* Your point of view will be rebutted by those who say that the health of China, India, Poland, and Russia is so much worse than ours, that ours is wonderful. Will you please remember that, Senator Pepper?

Senator Pepper: I assume that you intimate that what we should think of is what our conditions are in respect to what they might be with adequate medical care. *Dr. de Kruif:* Always. I feel, sir, since we are arrogating to ourselves leadership in the world and among the allied nations, that the first thing we should do would be to put our house in order in regard to health.

Senator Pepper: Have you any figures or any information that would entitle you to make a comparison between what we have done in the way of providing public health facilities to our people and what the Germans have done in that respect? *Dr. de Kruif:* No, I cannot, sir. Since the closing of the frontier, you know, since the war, I think very little is known about that. Previous to the war, I think we got figures, but it was generally said among friends of mine that the Nazis took a great deal of care of the health of their soldiers and of their industrial workers, too, but I am not an authority on that and I have no figures.

Senator Pepper: Did you have an opportunity to make any study of the Russian system before the war? *Dr. de Kruif:* No.

Senator Pepper: To know whether or not it was possible for the citizenry of Russia to get access to hospitals and to medical attention? *Dr. de Kruif:* I have read books about it, and one book in particular by Dr. John Kingsbury and Sir Arthur Newsholme that related that such facilities are placed at the disposal of all the citizens. However, how good those facilities and how accurate the Russian medical manpower and nursing manpower and scientific manpower are, I do not know.

Senator Pepper: It is not maybe an outlandish assumption to make that a good deal of the fertility and strength that have been exhibited in the resistance of the Russians to the Germans

is attributed to, among other things, those facilities and those conditions. *Dr. de Kruif:* I do not know. The Russians are hereditarily a healthy lot. The Russian women do not seem to have much trouble in bearing children, because of the rapidity of parturition. They bear their children very quickly. The childbirth takes less time than it does in many other western countries, and consequently you cannot say that it was the medical care that did it, because they are such tough, good people, you see.

Senator Pepper: It is not maybe too much to assume that it might be contributed to the medical care and attention that they have received that has made them a stronger people than they otherwise would be? *Dr. de Kruif:* I would not go on the witness stand and say to you, sir, that that was the case.

Senator Pepper: I can summarize one of the suggestions you made, can I not, by saying that you believe that experience has proven that the American Medical Association, whatever their virtues, cannot be depended upon by the United States to provide an adequate, complete and comprehensive public health program. *Dr. de Kruif:* Not alone. They should participate in it, but they cannot be depended upon to lead it and to organize it.

Senator Pepper: Such leadership and such responsibility must come primarily from the government and the people of the United States? *Dr. de Kruif:* Definitely.

Senator Pepper: Doctor, thank you very much. *Dr. de Kruif:* Thank you, Senator Pepper.

Senator Pepper: We are considering you an esteemed doctor. *Dr. de Kruif:* May I say one thing, Senator?

Senator Pepper: Yes. *Dr. de Kruif:* You can always be sure it is all right to call a man a doctor who is a medicine doctor, a dentist doctor, a horse doctor, a chiropractor, but not a man with a Ph.D. in bacteriology.

FRIDAY, NOVEMBER 6

Senator Pepper: We appreciate very much your being here from your busy and constructive life, and will welcome any statement, Mr. Kaiser, that you feel disposed to make affecting this question of manpower, the question of the public health, or any of the factors that enter into the efficient use of the nation's manpower.

STATEMENT OF HENRY J. KAISER, SHIPBUILDER

ACCOMPANIED BY M. MILLER AND DR. SIDNEY GARFIELD OF THE KAISER INDUSTRIES

Mr. Kaiser: On the question of manpower, I would like it understood that I am not here to criticize any work that anyone is doing on the manpower situation, who are working unquestionably very seriously and devotedly in the interests of the government, and anything that I present here is merely presented as suggestions with the hope that they will be helpful in getting directly the viewpoint of our exprience in the areas in which we are working industrially. There may be also weaknesses in our suggestions, and they are presented with that view in mind, with the idea of only being helpful. In response to your request to appear, I have had, since that time, all of the heads of our various organizations in the area study the problem, and asked them to come through jointly with a report, as well as asked a representative to come from there to be here with me in order that if there were any details that I was not familiar with, I could ask him, and he report to you. Likewise, the same thing on the medical situation. Now I am presenting here, first, their problems. These may seem critical; they are not critical, they are merely the problems. And second is a suggestion which might solve those problems. So I am not coming here only with the problems, but I am coming here with a suggestion that might solve them.

[*After some preliminary remarks, Mr. Kaiser said:*]

Mr. Kaiser: There is an apparent lack of coordination between Selective Service and War Manpower Commission. There is no definite policy as to the priority of war industry or essential civilian industry with relation to Selective Service. The employer, therefore, is not clear as to what program of training he should adopt because he doesn't know which personnel may be called or may voluntarily enlist, and, therefore, cannot intelligently program his training schedule. The present policy of Selective Service, by quotas, in each state in the Union is, in our opinion, resulting in inefficient use of manpower by armed forces, war industry, and essential civilian industry. Armed services are draining certain critical war industry and essential civilian production areas while other areas have surplus. This also is particularly true with respect to the medical situation. While plans are under consideration, no definite action has been taken with respect to communities that are increasing in population and, therefore, should have a stabilized medical manpower.

. . . . . .

Senator Pepper: Mr. Kaiser, just as a preliminary background, you are employing at the present time substantially how many men? *Mr. Kaiser:* A quarter of a million.

Senator Pepper: Scattered over how large an area? *Mr. Kaiser:* It is a tremendous area.

Senator Pepper: How long have you been in the construction business, Mr. Kaiser? *Mr. Kaiser:* Thirty years.

[*After submission of his proposals for control of manpower, Mr. Kaiser said:*]

Mr. Kaiser: Right here on that question of taking care of these men, I would like to have Dr. Garfield make a few statements so it will come in at this time, and I think it will show that we have the same problem there.

Senator Pepper: State your full name and address, please, Doctor. *Dr. Garfield:* Dr. Sidney Garfield, Oakland, California.

Senator Pepper: Doctor, give us a little of your background, so that the record will contain it. *Dr. Garfield:* I am in charge of the medical program of the Kaiser Shipyards, that is both South in Richmond, California, and up in Vancouver, Washington. It has been Mr. Kaiser's policy—

Senator Pepper (interposing): Just a minute; are you a graduate of an approved medical school? *Dr. Garfield:* Yes, sir.

Senator Pepper: What is your school? *Dr. Garfield:* The University of Iowa.

Senator Pepper: All right, go right ahead.

Mr. Kaiser: I would like to say this, that Dr. Garfield started serving our medical end at, I think, Parker Dam, and from there he went on through with us and gave us a great deal of service off and on until finally, at Grand Coulee Dam, we established probably one of the finest hospitals at Grand Coulee Dam in the State of Washington, with 3 operating rooms and 120 beds.

Senator Pepper I had the thrill of visiting that project one time, Mr. Kaiser, while it was in the process of construction, by your kindness, and it was certainly an inspiration to me. *Mr. Kaiser:* I am glad it was, thank you. At Grand Coulee we there found out what we really could accomplish in the way of giving attention to the medical care of the men, not only to their accidents but also to their health, and we therefore proceeded in this industry to do the things that he will tell you about.

Senator Pepper: How many years now, altogether, have you been with the Kaiser Company, Dr. Garfield? *Dr. Garfield:* Nine years.

Senator Pepper: Engaged primarily in protecting the health of the employees of these companies? *Dr. Garfield:* Yes, sir.

Senator Pepper: For the purpose of making them able to render more efficient work, primarily, to these organizations? *Dr. Garfield:* Yes, sir.

Senator Pepper: All right, Doctor, go ahead.

Dr. Garfield: It has been Mr. Kaiser's policy to create on each job that he has, where those facilities do not exist, a complete medical service, which includes a hospital, medical service during sickness, and so forth. The two areas that we have now that are critical areas are Richmond and Vancouver, Washington. At Richmond—

Senator Pepper (interposing): Richmond, California? *Dr. Garfield:* Yes, sir. At Richmond, where we employ —— men, Mr. Kaiser has caused to be built a hospital of 130 beds, at his own expense, in the city of Oakland. We have staffed the hospital with 36 physicians. Let me first state that there is no shortage of physicians in our yards at the present time, that is, the Vancouver or Richmond yards. Also in the Richmond area we have caused to be built right at the shipyards another hospital of 65 beds, completely equipped with surgeries and everything you need to care for these men. Up in Vancouver, where we now have 22,000 men, and anticipate 50,000 men, we have another hospital erected, of 70 beds at the present time. We have 18 physicians, nurses and all the necessary staff to operate it.

Now in selecting our staff of these shipyard hospitals, as much as possible we have chosen men who we figured the Army or Navy would not accept. Of our 36 doctors at Richmond, 12 are over 40 years of age, 14 have physical defects for which the Army has rejected them, and about 13 are healthy, active men, 13 out of 36. At Vancouver—

Senator Pepper (interposing): And young, are they young men also? *Dr. Garfield:* These 13 are all in their 30's—pardon me, 2 are 40.

Senator Pepper: Are they married? *Dr. Garfield:* Yes, sir, every 1 of them is married. Now our particular problem is this—the Procurement Board in the Richmond area—

Senator Pepper (interposing): You mean the Procurement and Assignment Board, of which Dr. Lahey is the chairman? *Dr. Garfield:* Yes, sir.

Senator Pepper: Acting under the War Manpower Commission? *Dr. Garfield:* That is right. We have two particular problems. One is in Richmond and one in Vancouver, and they are different. The Procurement and Assignment Board in the Richmond area is not sympathetic with our program.

Senator Pepper: You mean your program of keeping your workers healthy? *Dr. Garfield:* That is right.

Senator Pepper: And providing for their medical care? *Dr. Garfield:* That is right. Our program not only includes for their accidents, but it also includes care for their health, nonindustrial illness, on a prepayment—

Senator Pepper (interposing): You mean you try to provide in your medical facilities medical attention whether the cause for it ensued directly from their work or from general conditions? *Dr. Garfield:* Yes, sir, it is a complete program. We know that 90 per cent of absenteeism due to illness is due to nonindustrial illness, and it is our job to cut that down to get maximum production. The only way we know of doing that is—

Senator Pepper (interposing): By "nonindustrial illness" you mean illness attributable to causes not directly connected with their work? *Dr. Garfield:* That is right. The Procurement and Assignment Board, as I stated, are not sympathetic with that program. The Medical Association in general hasn't liked our doing prepaid medicine.

Mr. Kaiser: Although they can't serve it, they haven't the facilities to serve us at all.

Senator Pepper: Go into a little detail on that, what do you mean by that, Doctor? You don't mean that they are not in favor of people being healthy, do you? *Dr. Garfield:* No, they aren't in favor of our coming into that area and taking over the care of those men. Incidentally, we didn't do it in Richmond—

Senator Pepper (interposing): Did you coerce this plan upon these people? *Dr. Garfield:* No, it is purely voluntary.

Senator Pepper: Were these American citizens that you were giving this attention to? *Dr. Garfield:* Yes, and it is purely voluntary.

Senator Pepper: And did they concur in the plan that was prepared for their benefit? *Dr. Garfield:* They are all signing up for it.

Mr. Kaiser: I would like to say this, in that connection, so as to make it clear. It is purely a voluntary service on the part of the men, and unfortunately, because of the tremendous investment needed, I haven't had the necessary money to provide the facilities as rapidly as the men have asked for this, and we have shut off taking—in one area 39,000 have applied, and we have been forced to stop taking the men because of the fact that we didn't have sufficient facilities to take care of them.

Senator Pepper: What does the man himself do to get the benefit of this? *Mr. Kaiser:* He pays 50 cents a week.

Senator Pepper: That goes into a fund? *Mr. Kaiser:* That goes into a foundation.

Senator Pepper: Well now, do you supplement those funds or does management supplement those funds any, Mr. Kaiser? *Mr. Kaiser:* I started and built the facilities, and furnished them as a foundation.

Senator Pepper: And then the fees that the men pay, or the employees pay, are essentially for operating expenses? *Mr. Kaiser:* Yes, and we are extending—any that is left over is used as a foundation. At the present moment we are anticipating those fees and borrowing additional money to expand the facilities so we can take on more men.

Senator Pepper: I was curious about your remark, Doctor: did you attempt to employ physicians and doctors and nurses who were of disrepute in the medical profession or incompetent. Was that the reason the medical association did not sympathize with your effort? *Dr. Garfield:* Oh, no, the history of the Medical Association—you know what happened here in Washington on the group medical prepayment basis—the medical profession naturally reacts to something like that in a contrary manner, they don't like prepaid medicine. Now as far as we are concerned, it is the only way we know, and we put it up to them before we started it, we told them we were going to do it and asked them if there was any other solution. It is the only way we know of taking care of those men adequately.

Senator Pepper: As a doctor, have you any reason to suggest as to why the medical association, as such, is opposed to what you call the prepaid medicine? *Dr. Garfield:* Well, it is just a change in the old traditional way of handling medicine.

Senator Pepper: The doctors that are working for you in your hospitals under the Kaiser organization, and the nurses employed there, they are American citizens too, are they not? *Dr. Garfield:* Certainly.

Senator Pepper: Did they come voluntarily? *Dr. Garfield:* We have a few aliens we have taken on, as far as doctors go.

Senator Pepper: Those are some of the refugee doctors? *Dr. Garfield:* That is right.

Senator Pepper: But essentially it was a voluntary process, these doctors and nurses coming into your institution? *Dr. Garfield:* Oh, yes.

Senator Pepper: You pay them a fair compensation, do you? *Dr. Garfield:* Yes, sir.

Senator Pepper: Which is satisfactory to them? *Dr. Garfield:* Yes, sir.

Senator Pepper: And they are men and women of professional repute and personal integrity? *Dr. Garfield:* Yes, sir.

Senator Pepper: So that the patients themselves come voluntarily into this association? *Dr. Garfield:* Yes.

Senator Pepper: The technical staff comes voluntarily into the association? *Dr. Garfield:* Yes.

Senator Pepper: And so does the management of the company in the provision of the foundation facilities? *Dr. Garfield:* Yes, sir.

Senator Pepper: So that all the people directly concerned, so far as you know, are satisfied with the arrangement? *Dr. Garfield:* That is right.

Mr. Kaiser: Senator, this would be very interesting to you, since you were at Grand Coulee. At Grand Coulee we went further than the men themselves, we also went to the families and took on the health of the families; and in the early stages,—all through the whole stage it is voluntary, please believe that—in the early stages we only got those families that were very sick, and it was not at all profitable, in fact it looked likc a loss—is that correct, Doctor? *Dr. Garfield:* Yes.

Mr. Kaiser: And we only had about 10 per cent. And then suddenly, as the result of the service to the families, voluntarily it increased to 90 per cent, and when we finished Coulee Dam we had 90 per cent of the families. And, Doctor, you can say how the deaths decreased. This is interesting.

Dr. Garfield: The most amazing part of the whole thing was that when we had the plan started and in operation, people stopped dying. That sounds funny, but actually what it meant was that they came to us,—

Senator Pepper: You don't mean that the American Medical Association opposed a plan which made it possible for people to stop dying, do you? (Laughter.)

Mr. Kaiser: This is interesting.

Dr. Garfield: Nobody opposed us up there because we were there alone, there were no other doctors and no other hospitals, and they let us alone. The reason they stopped dying was the fact that they would come to us with their early symptoms. There wasn't the factor of medical cost to keep them away. They would come to us with the first pain in their abdomen, when they first got their colds, and we would catch their appendicitis cases before they ruptured, would get the pneumonia cases before they were terminal, and we would take care of them and get them well. It really was amazing, it is the one thing that struck us, and we are sold on it. Financially we believe we lost money on the operation up there, but as far as that reflects on their health, it was tremendous.

Senator Pepper: Now, Doctor, this is what lawyers would call a conclusion and a question of an expert, but since you have had this experience and since you are a doctor, I think you would qualify in any court to be able to answer this question. Is it your opinion, based on your experience in this place and other places where this plan has been put into effect, that a number of human lives have been saved by the operation of this plan which could not have been saved by the operation of the ordinary system of private medical care paid by your own funds in the normal way? *Dr. Garfield:* There is no question about that. I am afraid we are making too much of an issue out of this in relation to our problem. Now the Procurement and Assignment Board hasn't come out and said "Now we don't like you because you are doing this, and we are going to take your doctors away," but indirectly there is that sort of a feeling in the situation. In other words, they are not sympathetic with what we are doing, and I think they are not sympathetic with keeping our organization going. Now they have asked me to replace all our doctors with older men. We have 11 doctors down in the Richmond area who are over 40, 50 and some as high as 65. Those men can do a limited amount of work. They aren't active any more; they have to sit in one

spot. We have a tremendous volume of work taking care of ——— men, both industrial and nonindustrial, and it is a job. We need a certain number of young, active men to do that work, particularly our specialists. When we create this service, we build it around a specialist group, surgeons, orthopedic men, eye, ear, nose and throat, to give the men the best possible service.

Senator Pepper: In other words, in any kind of an efficient medical organization which is comprehensive in character, there are a few key men, and if you take those key men out you break down the strength of the organization? *Dr. Garfield:* That is right.

Senator Pepper: You say they want to take those key men away from you? *Dr. Garfield:* They have asked us to replace all the men who are available for army service.

Senator Pepper: As a matter of fact, the job those key men are doing is to keep men working in the shipyards and in the other war work that the Kaiser company is doing? *Dr. Garfield:* That is all they are doing.

Senator Pepper: So they are contributing essential things necessary to the carrying on of the war? *Dr. Garfield:* That is right, and they are doing it this way—one doctor to 2,000 men. Now the Army, according to what Mr. McNutt told us the other day, has 40,000 doctors to 4½ million men, approximately. That is 1 to 100. We are doing it with 1 to 2,000. Not only that, but we are taking care of all the sick men, all the men that the Army didn't take. We have no physical examinations on our job, that is a union demand, and even if it wasn't a union demand we would have to keep everybody working we possibly could. We are taking care of men on those jobs—some of them have cancer and they are physically unfit, all sorts of conditions, but we are keeping them working.

Mr. Kaiser: Senator, the Doctor is bringing out a point that is very important, and he is bringing out this point—that in the Army we have one doctor to each hundred men, where in the Army of Supply the men who are producing the things that those men need in the field to be protected, we only have 1 to 2,000. It is a problem worthy of a lot of consideration, and I don't know what the answer is, but it should be known that that problem exists.

Senator Pepper: At least, Mr. Kaiser, if your suggestion were adopted and there were an overall Manpower Committee—*Mr. Kaiser* (interposing): That is the answer.

Senator Pepper (continuing):—the same committee that procured doctors for the armed services would be concerned about the procurement of doctors for this Army of Supply? *Mr. Kaiser:* Yes, the whole thing is all one problem.

Senator Pepper: In other words, while the Army is telling you that you must let them have all your young men, you might say to the Army "You must take some of our older men"? *Mr. Kaiser:* That is right. And Dr. Garfield's position is that with the medical society practically directing and handling the Procurement Service, if they are not in sympathy with our prepaid medical service—which some of them are and some of them are not, that is clear to every one—but if they are not, they are not the ones in any case to direct a service of this kind or to be associated with it. There could be prejudice and it shouldn't be there.

Senator Pepper: Do I understand, then, from you, Mr. Kaiser, and you, Doctor, that although the present Procurement and Assignment organization under the Manpower Commission occupies on its surface an official status, nevertheless you find, or you believe, that it represents essentially the views of the American Medical Association in its policies? *Dr. Garfield:* I don't think there is any question about that, and fundamentally they are doing a good job. They don't realize the importance of production; they haven't come over from San Francisco to Oakland to see our shipyards, they don't know what we are doing. I have told them, but that is about as far as it goes. We need somebody in back of it who is primarily interested in what we are doing.

Mr. Kaiser: Senator Pepper, I think it is only fair to say that I went to see Dr. Lahey. Dr. Lahey understands this problem, I couldn't imagine a man who could be more devoted and more sincere and with greater leadership, and a very fine individual, but he nevertheless is only one man, and he doesn't control, it is the system that you are concerned with.

Senator Pepper: That is just what I was going to suggest, Mr. Kaiser. Dr. Lahey came before our committee a few days ago, and the Doctor exhibited all those fine qualities you have mentioned. Moreover, he exhibited that he was practically an automaton—I say it without deprecation—a marionette for the procurement people in the Army and Navy, they just said, "We want so many doctors," and it was their job to go out and get so many doctors. They did decide sometimes, through the recommendations of the medical association or as a result of a survey, the people in a given community who were eligible to come in, who are essential or nonessential; but essentially there wasn't any agency at the top who was dividing the nation's medical manpower between the Services of Supply and the fighting services, that is, the services that were nearer the front line of battle, and that is why you are suggesting the necessity of the overall consideration of this problem? *Mr. Kaiser:* That is right.

Dr. Garfield: Let me mention our Vancouver problem. It isn't so long. Up there the Procurement and Assignment Service are very sympathetic with our program, they backed us 100 per cent, every doctor we have they said "You can keep." But they do one thing which stops us, they say to us "You cannot take care of anybody but your employees." Now Vancouver is an area of 18,000 people. In connection with our shipyard workers Mr. Kaiser has caused to have built about 15,000 family units in the area, and bring into those units about 50,000 people. With the men in our wards, there will be an increase of population from 18,000 to 100,000 people in that area. The Procurement and Assignment Board tells us "Your men are O. K. working at the yards, taking care of your employees, but you must not take care of those families. If you do, we will declare your men nonessential and they will be taken into the Army."

Senator Pepper: Who told you that? *Dr. Garfield:* The director of the State Procurement Service. I have a letter to that effect.

Senator Pepper: Under the National Procurement and Assignment Service headed by Dr. Lahey, in the Manpower Commission? *Dr. Garfield:* Yes, sir.

Senator Pepper: So they told you if you allowed your medical staff to give medical attention to the families of your workers in the same community in which your operations were carried on, that they would punish you by declaring your doctors that were serving these people nonessential, and put them into the Army? *Dr. Garfield:* Yes, sir, we have a letter to that effect.

Senator Pepper: Is that letter available so that you could allow us to have it? *Dr. Garfield:* I have a copy of the letter here.

Senator Pepper: We would like to have it. You just read it, Doctor.

Mr. Kaiser: I want to continually impress on you that we are not here to criticize, we are here to work to help and to get some results.

Senator Pepper: The thing you are interested in is efficient production for war? *Mr. Kaiser:* That is right, we are very seriously, and it is merely suggestions that we are offering. It is very easy to be selfish, and we don't want to be that way.

Senator Pepper: Do you find it, Doctor? *Dr. Garfield:* Yes. It is written by the chairman of the Procurement and Assignment Service.

Senator Pepper: Go right ahead. *Dr. Garfield:* Do you want the whole letter or the part pertinent to this particular thing?

Senator Pepper: That is all right.

Dr. Garfield (reading):

"Employees' Family Care: That no prepayment plan shall be adopted for the care of the employees' dependents. Further, that such dependents may have all the facilities of the company hospital under the care of physicians of their choice. The company reserves the right of staff supervision." The "company" is our medical service. "That no full time physician who is an employee of the company shall treat such dependents except in an emergency. This plan shall be effective until local medical care shall become insufficient or unforeseen exigencies arise demanding reconsideration."

Now they don't threaten us there, but that is what they told us in that meeting.

Senator Pepper: They orally told you that you would have these men classified as eligible for armed service and brought into the armed service if you violated the instructions they gave you here of confining their medical attention to your employees only, except in cases of emergency? *Dr. Garfield:* Yes. Now incidentally, that would be satisfactory with us, we are not anxious to go out into the field of taking care of those families.

Mr. Kaiser: We haven't the facilities.

Dr. Garfield: But there are only 15 doctors in Vancouver. At the present time there are about 40,000 people there, and it is going to be increased to 100,000. Those doctors are working at capacity now. Now all these people coming into that area are going to need medical attention, and it is going to reflect on our job.

Senator Pepper: Doctor, what I can't understand is, you said that that letter was from the chairman of the Procurement and Assignment Service for doctors in Vancouver, or in the state of Washington? *Dr. Garfield:* The state of Washington.

Senator Pepper: Acting under the National Procurement and Assignment Service in the War Manpower Commission? *Dr. Garfield:* Yes, sir.

Senator Pepper: What I can't understand is why that agency has the slightest concern about whether any prepayment plan or anything like that is adopted. Has the Manpower Commission adopted any policy on prepayment plans for medical attention for the civilian population? *Dr. Garfield:* They are using this Procurement and Assignment Service to take care of things that they don't like.

Senator Pepper: You mean who doesn't like? *Dr. Garfield:* That the medical society doesn't like.

Senator Pepper: What connection has the medical society got with this problem? I thought that was from the chairman of the Procurement and Assignment Committee for doctors in the state of Washington. *Dr. Garfield:* Well, he is a doctor of the medical society.

Senator Pepper: He is what? *Dr. Garfield:* You see, the Procurement and Assignment Service are composed of medical men of the Medical Society of Washington.

Senator Pepper: Does this chairman of the Procurement and Assignment Service have any official position in any of the medical societies? *Dr. Garfield:* He is chairman of the state medical society.

Senator Pepper: Oh, he is also chairman of the state medical society? *Dr. Garfield:* That is right.

Senator Pepper: So the same man who is supposed to represent the United States of America in the procurement of doctors for the service of the Army and Navy, is also the state chairman of the medical society, which is a local branch of the American Medical Society? *Dr. Garfield:* Yes, sir.

Senator Pepper: So he takes advantage of his position as a public official to effectuate the policy of his private medical association; is that correct? *Dr. Garfield:* That is right.

Senator Pepper: So the relationship, then, between the Procurement and Assignment Service of the War Manpower Commission, and the private organization of private professional men, known as the American Medical Association, is very intimate? *Dr. Garfield:* Well, they are the same thing.

Senator Pepper: So that public policy emanates primarily from a private source in many respects, according to your experience, in the procurement of doctors? *Dr. Garfield:* Yes. I don't want this to be interpreted as an attack on the medical society, it isn't. But they are stopping us from doing something that is very necessary in that area, and which bothers us quite a bit.

Senator Pepper: And which has a directly injurious effect upon the health and the lives of American citizens, primarily women and children, the families of war workers in the area that you have described? *Dr. Garfield:* There is no question that it will have. We have the medical staff there to do the job, and people come to us for medical care and we can't take care of them, we are not allowed to, we call doctors from Vancouver to do it, and they are too busy to do it.

Dr. Lamb: In that connection, Doctor, this great increase in the population of Vancouver will be the families of your workers? *Dr. Garfield:* Yes, sir.

Dr. Lamb: For the most part? *Dr. Garfield:* Those housing facilities were built for our people.

Dr. Lamb: Specifically for them? *Dr. Garfield:* Yes.

Dr. Lamb: So that the health conditions in those dwellings will be the health conditions of the families of your workers? *Dr. Garfield:* Surely.

Dr. Lamb: And what happens to those families will directly affect the worker on the job? *Dr. Garfield:* It goes further than that. If we should have an epidemic in that housing area, it might stop our job. If we had to quarantine that area, it would stop our job and stop production, it is really a dangerous, critical situation.

Dr. Lamb: And one for which, as the expansion takes place, there are no facilities in sight? *Dr. Garfield:* No facilities. Now we could provide for it, and that is what we want to do, but we are stopped by this order of the medical society. Now I haven't gone back to them and argued the thing more, which I should have done. This thing happened fast, and the only reason I am here—I didn't know I was going to be here—but I might go back there and by arguing with them and talking them into it, I might turn them around to our viewpoint, but it would be quite a job because the local medical society does not want us to have anything to do with the medical care of those people. Now they are not equipped to do it, they haven't got the time and they are all busy now. But still they want us to stay out of the picture.

Mr. Kaiser: They haven't any hospitals to do it in. *Dr. Garfield:* The hospitals there are all filled up.

Senator Pepper: So from what I understand you to say, the medical society would rather the women and children who are the families of the war workers in the Kaiser yards in that area, building ships for the United States of America, would go without medical care and attention than that they should receive it through the facilities that you have described? *Dr. Garfield:* Well, no, they don't say that, they say they will take care of it somehow.

Senator Pepper: Do they have the facilities? *Dr. Garfield:* No.

Senator Pepper: So then what I said is substantially the fact, whether it is the intent or not of the society? *Dr. Garfield:* Yes.

Senator Pepper: In other words, if you don't furnish this service to them, it is not available. Yet they don't want you to furnish it? *Dr. Garfield:* That is right.

Mr. Kaiser: The best illustration is that the population has more than doubled, and there have been no increased facilities and therefore there is that situation.

Dr. Garfield: There are fewer doctors there than there were five months ago, and no hospital facilities have been added except the ones we built.

Senator Pepper: Doctor, what you say strikes me with particular force, because I have heard it hurled as a criticism against some so-called new dealers in the government that they were trying to advance social gains as a part of the war effort under the cloak of the war. From what you have said, it looks to me as if there may be some who have tried to protect special interests under the cloak of the war too. *Dr. Garfield:* Right.

Senator Pepper: I wanted to ask you, Mr. Kaiser, from what you have said, and from your vast experience, whether it would be proper to say that health is a military necessity; that health is necessary to the war effort? *Mr. Kaiser:* There isn't any question but what it is, absolutely. We have thought so before the war, best illustrated by what we have done in the way of hospital facilities and care of the men, and we are going on with that after the war, we are going to continually do this thing, because we believe that this will be of benefit to the medical association, because we believe that our people should become medically conscious, and when they do there is opportunity for any one, privately or otherwise. We do not believe that should be a government service, we believe that should be an industrial service created by the industrialists who are responsible for employing those men.

Senator Pepper: In other words, Mr. Kaiser, you believe that the doctors would not suffer by health facilities being extended to a larger number of people, because there would be a greater demand for doctors? *Mr. Kaiser:* That is exactly what I believe, but I believe more forcibly that that isn't anywhere near as important as it is to the United States of America that the industrialists who are responsible for the industry of this country take care of those men and provide them with the facilities and give them the opportunity to join with them voluntarily. Unquestionably it should be a foundation and not a profitable institution, it should be a foundation created by industry that should go on and on and be a perpetual care of every man that is employed—and that is my ambition. But it involves a great deal of investment and can only be done gradually. But now that we are in this thing as we are and it is a war supply service, it is of vital importance, and therefore it is of vital importance that the medical association or every man in America recognize its vital importance. The question is if it is not as important to serve the supply lines as it is to do the fighting, because if those men are left without service, they can not do any fighting.

Dr. Lamb: First a question, Mr. Kaiser, about this medical care program that you have described. Would you say—I got the impression from something you said earlier that you would say that, once this program was known to the workers and had begun to roll, the voluntary prepayment plan would build up in such a way that it would ultimately be on not a profit making basis, but a balanced budget basis? *Mr. Kaiser:* That is right.

Dr. Lamb: So that any possibility that at Grand Coulee you had originally lost money, was due to the small participation? *Mr. Kaiser:* That is right, that was early, the total service finally came out all right. That was not a foundation. Now I am going ahead with a foundation so that any returns are immediately going to the advancement of that service.

[Here was a considerable discussion of the proposal of Mr. Kaiser on control of manpower. Next Senator Pepper called for Dr. Morris Fishbein.]

Dr. Fishbein: Would it be amiss to ask that Dr. Garfield remain while I correct some facts and so that he may correct me if I am wrong as to certain statements he made?

Senator Pepper: This is not a debating society between you and Dr. Garfield, but if he cares to remain we would be glad to have him.

Dr. Fishbein: I understand that.

Senator Pepper: Will you state your name?

STATEMENT OF DR. MORRIS FISHBEIN

Editor, THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Dr. Fishbein: Dr. Morris Fishbein.

Senator Pepper: Where do you live, Doctor? *Dr. Fishbein:* Chicago.

Senator Pepper: Where did you receive your medical education? *Dr. Fishbein:* The University of Chicago and the Rush Medical College, Chicago.

Senator Pepper: How long have you been engaged in the practice of medicine? *Dr. Fishbein:* Following my graduation I was about a year and a half in practice and in research on pathology.

Senator Pepper: You are not now engaged in the practice of medicine? *Dr. Fishbein:* No, sir.

Senator Pepper: What is your employment at the present time? *Dr. Fishbein:* I am editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and of *Hygeia*, a health magazine. I also am professorial lecturer at the University of Chicago School of Medicine and the University of Illinois.

Senator Pepper: What are the subjects of your lectures? *Dr. Fishbein:* Medical economics and history of medicine.

Senator Pepper: They are not technical subjects? *Dr. Fishbein:* Not the practice of medicine.

Senator Pepper: How long have you held your present position? *Dr. Fishbein:* I have been editor since 1924 and was assistant editor from the end of 1913 up to 1924.

Senator Pepper: In what manner were you chosen for your present position? *Dr. Fishbein:* I was chosen by the Board of Trustees of the American Medical Association, which is the body elected by the House of Delegates to administer its affairs.

Senator Pepper: Will you give us a brief summary as to the nature of the organization known as the American Medical Association, the number who are in it and what its organizational setup is, Doctor? *Dr. Fishbein:* The American Medical Association is a voluntary membership organization. There are in the United States about 176,000 doctors licensed to practice. There are 123,000, approximately, who are members of the American Medical Association. These members are organized into county medical societies, which in turn are organized into state medical societies. The county medical societies elect delegates to the state medical associations and the House of Delegates of each of the state associations elects delegates to the House of Delegates of the American Medical Association. The House of Delegates of the American Medical Association is the body charged with establishing all policies of the American Medical Association.

Senator Pepper: Do you have annual conventions? *Dr. Fishbein:* There is an annual convention of the House of Delegates and of the organization and, in addition to that, special meetings when called for.

Senator Pepper: That annual convention embraces which House of Delegates, the national house? *Dr. Fishbein:* The national House of Delegates.

Senator Pepper: The one that is elected by the states? *Dr. Fishbein:* By the state houses of delegates.

Senator Pepper: And the national House of Delegates selects a Board of Trustees? *Dr. Fishbein:* The national House of Delegates selects a Board of Trustees.

Senator Pepper: How many are there on that Board? *Dr. Fishbein:* There are nine members of the Board of Trustees. Two are elected each year to serve a term of five years, and the maximum term is ten years for any trustee.

Senator Pepper: You are employed, then, by the Board of Trustees? *Dr. Fishbein:* I am employed by the Board of Trustees.

Senator Pepper: Do you have a national headquarters of the Association? *Dr. Fishbein:* The National Headquarters is in Chicago.

Senator Pepper: How much of a clerical and managerial staff is employed? *Dr. Fishbein:* We employ from 630 to 640 people.

Senator Pepper: Are you considered the executive director of the organizational setup of the Association? *Dr. Fishbein:* No, sir, the Association is organized with a Secretary and General Manager, who is the executive director. That is Dr. West. I am the editor in charge of publications.

Senator Pepper: Who determines the public policy for the Association? *Dr. Fishbein:* The House of Delegates determines all policies, and the officials of the Association are charged with maintaining and extending to the profession the policies of the Association.

Senator Pepper: Do you sit in with the group which determines the policies of the Association? *Dr. Fishbein:* I have no voice in the House of Delegates except when called to give information.

Senator Pepper: As a practical matter do you consult with the members of this body in the formation of policies? *Dr. Fishbein:* I may appear before any committee. All actions of the House of Delegates are taken by setting up a reference committee which hears the proposed action and any member of the Association may appear before any reference committee. The reference committee brings back its report to the House, and then the House acts on the report of the reference committee, after debate.

Senator Pepper: As a practical day by day matter, the articulation of the policy occurs primarily in the publication known as THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION? *Dr. Fishbein:* Yes.

Senator Pepper: Of which you are the editor? *Dr. Fishbein:* Yes, sir.

Senator Pepper: So that you are the one who articulates these policies that are formed, you say, by these authorities? *Dr. Fishbein:* Of course the proceedings of the House of Delegates are published broadcast to the medical profession and the nation as soon as an action is taken. The articulation of the policy is in the proceedings of the House of Delegates, which are published as a routine matter without modification.

Senator Pepper: How many times are those publications issued; how many times is the action of the House of Delegates published? *Dr. Fishbein:* It is published at once when the action is taken, and then maybe it is published repeatedly if discussion is needed.

Senator Pepper: How many times per year is THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION published? *Dr. Fishbein:* Every week.

Senator Pepper: So the public gets a chance to see and hear the articulation of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION a great deal more than they hear what is uttered by the body which you refer to, does it not? *Dr. Fishbein:* That depends, of course, on the importance of the policy in relationship to the public situation. At the last annual convention of the Association in Atlantic City there were in attendance representatives of every press association and important newspaper in the country, so that the actions were widespread throughout the nation.

Senator Pepper: But the only weekly publication, the only regular periodical of the American Medical Association, is THE JOURNAL, of which you are the editor? *Dr. Fishbein:* No, there is also another publication which is sent to all newspapers and press agencies throughout the country each week.

Senator Pepper: What is that? *Dr. Fishbein:* That is known as the *American Medical Association News.* So that all matters having to do with activities are sent out each week.

Senator Pepper: Who is the editor of that? *Dr. Fishbein:* A layman named Lawrence Salter.

Senator Pepper: Is his office in the headquarters of the Association in Chicago? *Dr. Fishbein:* Yes.

Senator Pepper: Is there any practical cooperation between you and him? *Dr. Fishbein:* He prepares the publication, and naturally it is approved by the Editor and the General Manager.

Senator Pepper: Which means you? *Dr. Fishbein:* And Dr. West.

Senator Pepper: So, as a matter of fact you are considered are you not, Doctor, the able and eloquent voice of the American Medical Association? *Dr. Fishbein:* Well, that is not my term.

Senator Pepper: Maybe I should have said the pen instead of the voice? *Dr. Fishbein:* I prefer to be known as the editor of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

Senator Pepper: Ofttimes we cannot limit ourselves below the reputation that we have gained, Doctor. As a matter of fact do you make any public addresses? *Dr. Fishbein:* Many.

Senator Pepper: Roughly how many speeches do you make in the course of a year, would you say? *Dr. Fishbein:* About one hundred.

Senator Pepper: Does any other official of the American Medical Association make as many addresses? *Dr. Fishbein:* I would say that many of them make addresses. Dr. Bauer, who is head of our Bureau of Health Education, makes perhaps sixty addresses a year.

Senator Pepper: He speaks primarily about public health matters, more or less on technical subjects I would assume? *Dr. Fishbein:* He speaks on public health. Now each of our trustees makes addresses. I would say that on an average each trustee may speak from ten to twelve times a year.

Senator Pepper: On matters of American Medical Association policy? *Dr. Fishbein:* Almost wholly on policy.

Senator Pepper: But it would not do any disservice to the great contribution that you have made to the Medical Association would it, Doctor, to say that so far as the American public is concerned, and generally so far as the American Medical Association members are concerned, you are the man, the official, the agency, through which the policies of the American Medical Association are regularly expressed in writing and in speech? *Dr. Fishbein:* That is correct, yes, sir.

Senator Pepper: Now, Doctor, would you be good enough to tell us whether you are acquainted with the Assignment and Procurement Service or, rather, the Procurement and Assignment Service, which is set up under the War Manpower Commission? *Dr. Fishbein:* I am acquainted with that service.

Senator Pepper: Who is the head of that? *Dr. Fishbein:* Dr. Frank Lahey.

Senator Pepper: He was at one time President of the American Medical Association, was he not? *Dr. Fishbein:* Yes, at the time he was appointed head of the Procurement and Assignment Board.

Senator Pepper: He has some assistants? *Dr. Fishbein:* He has a board, including four other men.

Senator Pepper: Are they members of the American Medical Association?

Dr. Fishbein: There are 123,000 members of the American Medical Association and it may almost be taken for granted that any physician of any repute at all is a member. These men are all members except Dr. Camalier, who is on that board and is a member of the American Dental Association—C. Willard Camalier.

Senator Pepper: Did you have anything to do with Dr. Lahey's selection as chairman of the Procurement and Assignment Board of the War Manpower Commission, for doctors? *Dr. Fishbein:* The establishment of the Procurement and Assignment Board—I can give you the complete story of it if you wish, it is a little long—

Senator Pepper (interposing): Let me ask you this. Did you make any recommendations on the subject? *Dr. Fishbein:* I was one of some thirty men who made the recommendations of a group of men to the Coordinator of Health, Defense and Welfare.

Senator Pepper: Who was that Coordinator? *Dr. Fishbein:* Mr. McNutt.

Senator Pepper: You recommended along with some other people, to Mr. McNutt, that Dr. Lahey be selected as chairman of this Procurement and Assignment Board? *Dr. Fishbein:* Yes, sir.

Senator Pepper: At that time Dr. Lahey was President of the American Medical Association? *Dr. Fishbein:* Yes, sir.

Senator Pepper: And Dr. Lahey accepted that responsibility and has occupied that position since that time? *Dr. Fishbein:* Yes, sir.

Senator Pepper: Now Dr. Fishbein, was a survey made of the doctors of the country by the American Medical Association? *Dr. Fishbein:* The American Medical Association established, about 1905, a regular system of keeping a record available of every physician in the United States, including as well his record of graduation, his background after graduation, his preliminary education and a record of the deaths of physicians. That directory is published every two years. It is maintained as a going concern, so that week by week it is kept up to date. When, in June 1940, it appeared that we might be engaged in a war, the Surgeon Generals of the Army and the Navy asked the House of Delegates of the American Medical Association, at its meeting, to make a study of the available manpower of the nation in the field of medicine in order to make certain that a rapidly expanding army and navy, and industry, and the civilians of the country might be provided throughout the period of the emergency with adequate medical service. It was recognized at once that the demands of a large army would be considerable.

Senator Pepper: You say "with adequate medical service." Did they ask you to decide also the question as to whether the country and the civilian and military population needed any more doctors than the country already had available? *Dr. Fishbein:* That question was to be included in the study; yes, sir. Immediately following that session a meeting was held with the Surgeon Generals of the Army and Navy and the Board of Trustees of the American Medical Association, who set up a Committee on Medical Preparedness, which was to be charged with the function of preparing the medical profession for the emergency. In June 1940, therefore, plans were made to make a new and immediate survey of the entire medical profession of the country in order to determine how many physicians would be willing to volunteer at once for the armed forces in case of need, since at that time obviously the only source of medical officers for the armed forces was voluntary enlistment. Then, when the Selective Service Act was passed, obviously there was another source for medical officers of the Army, namely those men included under Selective Service who were also physicians. Immediately the results of that survey were transferred to a punch card system, and that punch card system was established in the headquarters of the American Medical Association. On each punch card there are some eighty different points regarding each physician in the country, with regard to his availability for any of these services, the Army, the Navy, industrial medicine or civilian practice. When it became apparent that this problem was one of much larger scope than one that could be handled by any civilian organization, it was suggested that since the government had itself already established a National Roster of Scientific and Trained Personnel, which did not however include the data regarding the medical profession and the dental profession and the veterinarian profession, that the A. M. A. turn over to the government its punch card system covering the doctors of the country. So a complete set of similar cards was made and presented to the National Roster of Scientific and Trained Personnel, which is now a part of the War Manpower Commission.

Senator Pepper: Who made up the Roster of Scientific and Trained Personnel other than the doctors—*Dr. Fishbein* (interposing): That was made up, I believe originally, as a part of the National Resources Planning Board.

Senator Pepper: It was made by a public agency? *Dr. Fishbein:* By the government.

Senator Pepper: But in the case of the doctors the Roster was prepared by the doctors themselves?

Dr. Fishbein: Well, I will proceed now. The original inventory was prepared by the doctors themselves and it was decided to turn this over and our cards were copied completely and turned over to the National Roster of Scientific and Trained Personnel. By that time, however, we were already in the war and there had been considerable shifts of population and of the medical profession. I would say that by that time already at least 20,000 physicians had gone into the armed forces. So a new questionnaire was prepared by the Procurement and Assignment Service, working with the National Roster for Scientific and Trained Personnel. That new questionnaire, which was developed by them, was then sent again to every doctor and dentist in the United States and to the veterinarians, and they now have the two sets; they have the original set and they have the newer inventory which was made in 1942.

Senator Pepper: That last questionnaire is not the one which Dr. Lahey referred to as the one which was accompanied by a very strong intimation that, if they didn't come in as the Procurement and Assignment Service suggested, their names would be turned over to the Selective Service, was it?

Dr. Fishbein: That intimation, of course, is implicit in the Selective Service Act and need not be an intimation. Every man in the United States under 45 years of age is subject to Selective Service; so it is not necessary for the medical profession or any one to turn over their names to Selective Service.

Senator Pepper: But if I understood Dr. Lahey correctly, at the time the Procurement and Assignment Board sent out the call for the doctors that they regarded as nonessential, to come in, they also sent a copy of that call to Selective Service authorities, which gave a very strong suggestion to the recipients of the Board of Procurement and Assignment's message that if they didn't comply with its direction there would be coercion applied to them by the Selective Service authorities, is that right? *Dr. Fishbein:* I happen to have seen the statements sent by Selective Service to the Selective Ser-

vice Boards, and I happen to have seen also the letters sent by Procurement and Assignment to individual physicians, and I would not have said that there was coercion.

Senator Pepper: You mean that you have been working intimately with the Selective Service authorities in the procurement of doctors? *Dr. Fishbein:* No.

Senator Pepper: How did you happen to see these letters? *Dr. Fishbein:* There are 28,000 doctors contributing their services to the Selective Service Boards, and these facts are available to every one. You can go into any Selective Service board or appeal board and see the memoranda sent by Selective Service.

Senator Pepper: You saw these directives in the headquarters of Selective Service? *Dr. Fishbein:* I have seen such directives in the headquarters of Selective Service. There is also a medical department of Selective Service headed by Colonel Rountree.

Senator Pepper: Do you have any official position in that medical department of Selective Service? *Dr. Fishbein:* No, sir.

Senator Pepper: But by reason of your prominence in the medical profession and your responsible place in the direction and expression of policy for the American Medical Association, you have had an intimate relationship with these medical authorities in the Selective Service system? *Dr. Fishbein:* I would say that primarily as an active journalist I see pretty nearly everything that I can see that would interest the readers of the magazine.

Senator Pepper: I wonder if other publishers of magazines are given the same entree to the records of the Selective Service System? *Dr. Fishbein:* I have not seen the records of the Selective Service System; I have seen the memoranda issued to local boards and appeal boards, which are generally published widely.

Senator Pepper: I wonder if other personnel in Selective Service headquarters is kept in as intimate touch with their professional connections in the country as the medical authorities appear to have kept you informed as to what was of medical significance? *Dr. Fishbein:* I should think so. I have sat in at a meeting of the American Council on Education, and I happen to know that the engineers of the country and the architects—all trained personnel—are well in touch with the plans regarding the procurement of trained personnel. That is obviously necessary, since you begin in the grade school to prepare men for trained positions.

Senator Pepper: I was wondering whether or not you would say that because of your influence, or rather your association with these medical authorities in the Selective Service System, that you or the American Medical Association has had any material influence on the policy of the government with respect to the procurement of doctors? *Dr. Fishbein:* I would say only as far as we have published our opinions and they have listened to them.

Senator Pepper: Does the Board of Procurement and Assignment have doctors acting under the Manpower Commission of any state organization? *Dr. Fishbein:* They have an organization not only in each state but in each corps area.

Senator Pepper: Who constitutes the head of the state organization? *Dr. Fishbein:* In each state the Procurement and Assignment Board itself selected its own state representative; those vary in different states.

Senator Pepper: As a matter of fact do you know any of the heads of the state boards and know whether or not they have any connection with the state medical associations? *Dr. Fishbein:* I would say that some do and some don't. The endeavor was, I believe, to find in each instance a doctor who was of sufficient age so that he himself would not be called into the military service, because the medical profession has viewed the problem as being first the supplying of the armed forces with the physicians necessary to meet the needs of troops in camp, in training and in combat.

Senator Pepper: Who was it that had that idea? *Dr. Fishbein:* That idea was the general idea of the medical profession as a whole. The original policy adopted by the House of Delegates stated that.

Senator Pepper: Did I understand you? When you speak of the plan of the American Medical Association or of the medical authorities for furnishing medical facilities to the armed services, are you talking about some agency other than the government deciding how it would use its medical personnel? *Dr. Fishbein:* No, sir, we have no authority over medical personnel. The A. M. A. has no authority and the Procurement and Assignment Service has no authority; the authority rests with the local boards.

Senator Pepper: The chairman of the Procurement and Assignment Board at the time of his selection was President of the American Medical Association? *Dr. Fishbein:* Yes, sir.

Senator Pepper: Could you tell us in how many states the head of the Procurement and Assignment Board was, at the time of his selection, or is now, head of the medical society for that particular state? *Dr. Fishbein:* I would say that in a small proportion the smallest proportion, it was the president. In some instances it was the chairman of the council, in some instances it was the secretary, in some instances it was the chairman of the committee on medical preparedness of the state medical society and in some instances it was a physician who was merely known to be the best physician available for the position.

Senator Pepper: In how many states would you say, from your intimate acquaintance with the organization of the state societies, it was true that some official of the state medical society was the state head of the Procurement and Assignment Service? *Dr. Fishbein:* Well, does that go down to committee appointments also in the state?

Senator Pepper: You know, Doctor, what I am getting at. *Dr. Fishbein:* We have the state president, the state vice president, the secretary of the state medical society, the council of the state medical society, the house of delegates of the state medical society with its chairman. Then we have innumerable committees, including committee on medical preparedness of the state medical society. I would say that in practically every instance—well, not every because I could name possibly five where the man had held no position in the state society—but let's say that in forty-three states the man had a relationship to the state medical society.

Senator Pepper: Now, Doctor, as a matter of fact—it is a fact, is it not—that in setting up its Procurement and Assignment Service the United States government essentially took over the organization of the American Medical Association? *Dr. Fishbein:* No, that would not be true.

Senator Pepper: Well, they took over the President of the American Medical Association? *Dr. Fishbein:* But we change our president every year.

Senator Pepper: And they took over in the states some official or some prominent committee member of the A. M. A. to be the head of the state Procurement and Assignment Service for doctors? *Dr. Fishbein:* That would have to be coupled with the statement that practically every reputable doctor in the United States is a member of the American Medical Association.

Senator Pepper: I didn't ask you whether they took over members or not. In the case of Dr. Leahy they took the President of the American Medical Association? *Dr. Fishbein:* Yes, sir.

Senator Pepper: And you have already told us that in several states they took over generally—there may have been an exception in five states—but in at least forty-three of the forty-eight states they took over one of the officials, one of the prominent officials of the state medical society, or one of the prominent committee chairmen, as head of the state Procurement and Assignment Service? *Dr. Fishbein:* That would be correct; usually the chairman of the committee on medical preparedness in that state.

Senator Pepper: So that all the men who have been active in the functioning of the Procurement and Assignment Service—or most of them—have been active in the affairs of the American Medical Association? *Dr. Fishbein:* Well, of course that is a question which is very difficult to answer, when you say "all." If you would say "most of the men," I would say yes.

Senator Pepper: Now then Doctor, Dr. Lahey I believe further testified to us that the quotas were turned over to them by the armed services and—*Dr. Fishbein* (interposing): The armed services stated to them their need for physicians.

Senator Pepper: And they went out to get the personnel that the armed services required? *Dr. Fishbein:* Yes, sir.

Senator Pepper: Now you have heard the statement made here this morning that Mr. McNutt had stated that we had in the armed services essentially 1 doctor for each 100 men—is that statistically correct? *Dr. Fishbein:* The Army endeavors to secure 6.5 doctors per thousand men. Of course if you take the Army and the Navy together, we have, I believe, to give a round number because we are not supposed, I believe, to give exact figures, something over 40,000 doctors in the armed forces at this time.

Senator Pepper: Well now, Doctor, did any authority, representing the needs of the civilian population of this United States for health attention, sit in at the time those quotas were made and those directives were issued? *Dr. Fishbein:* The quotas of the Army?

Senator Pepper: Yes—to consider what the needs of the civilian population were? *Dr. Fishbein:* As far as I know, no civilian has endeavored, in the field of medicine, to tell the Army what their needs were.

Senator Pepper: Obviously the taking of doctors from the country will affect the public health, will it not? *Dr. Fishbein:* Yes, sir.

Senator Pepper: You regard the doctors and the nurses, of course, as essential to the maintenance of the public health?

Dr. Fishbein: Yes, sir.

Senator Pepper: So that it is almost possible to say that in the fixing of the quotas for the armed services, the public health—thinking of the health of the civilian population—was not considered? *Dr. Fishbein:* No, it would not be possible to say that because after all the Procurement and Assignment Service was charged by the President in his directive, with the conservation of civilian health, of industrial health and of the health of the armed forces.

Senator Pepper: Do you know of any instance, Doctor, where the Procurement and Assignment Board turned down any request for a quota that was issued to them in the form of a directive or request by the armed services? *Dr. Fishbein:* I would say rather that the Procurement and Assignment Service approached the matter scientifically—

Senator Pepper (interposing): Will you excuse me—I am trying to get an answer to my question. Did they turn down any request made by the armed services? *Dr. Fishbein:* I would say that in certain instances when the armed services had requested a man, they had refused to release that man, having declared him essential for civilian health. That has happened many times.

Senator Pepper: Well, the armed services never did tell them what man to call in as an individual, so Dr. Lahey testified? *Dr. Fishbein:* Oh yes, because men enlist voluntarily and the man who enlists voluntarily is cleared through the Procuremen and Assignment Service just as well as the man who is drawn in by his draft board.

Senator Pepper: Now in the state of South Carolina, if I recall correctly the testimony of Dr. Lahey, there has been a survey made and a quota established as to the number of doctors that could be taken from that state. *Dr. Fishbein:* Yes, sir.

Senator Pepper: And that was being handled on a statewide average by 1 doctor to every 4,100 people. *Dr. Fishbein:* That is a little tall, but I have the exact figures and I can leave them here.

Senator Pepper: And the quota that was established for that state was, by the various means by which doctors were taken into the armed services, after a while 170 per cent. *Dr. Fishbein:* Yes, sir.

Senator Pepper: So that in a state which already had a deficiency of doctors the existing system allowed 70 per cent more doctors to go into the armed services and out of the civilian population than the American Medical Association had said was the quota for that state, isn't that a fact? *Dr. Fishbein:* Well, let's get that straight again.

Senator Pepper: Is that or is that not a fact? *Dr. Fishbein:* That is not a fact. The American Medical Association had nothing whatever to do in any way, shape, manner or form with establishing quotas for anything.

Senator Pepper: Did the Procurement and Assignment Service make up those quotas? *Dr. Fishbein:* The Procurement and Assignment Service decided of itself, and without any consultation with the American Medical Association, that they wished to set for this year a minimum of 1 doctor to each 1,500 people remaining in the civilian population. That figure was reached on the basis of innumerable studies which had been made by various agencies including the United States Public Health Service, our own Bureau of Economics, the British figures, which had to do with Britain's method of securing physicians, the method of securing physicians in Sweden and Spain and so forth. On the basis of all those figures the Procurement and Assignment Service itself established as a reasonable quota for this year 1 doctor to each 1,500 people and made the statement that when the enrolment had reached that figure physicians would not be further withdrawn from that state.

Senator Pepper: That statement wasn't kept then, was it? *Dr. Fishbein:* In some of those states there never was 1 doctor to each 1,500 people. There are many areas of the country where that figure has never prevailed. Naturally you could not have begun the war on the basis of saying "We will take no physicians from South Carolina."

Senator Pepper: You don't mean to say, Doctor, that Dr. Lahey and his staff didn't know that? *Dr. Fishbein:* They knew that, they knew that very well, but bear in mind that before—

Senator Pepper (interposing): Are you aware of the testimony that he gave that they had weighted these quotas, taking into consideration the disparities in the several states? *Dr. Fishbein:* Yes, sir.

Senator Pepper: You don't mean to say that Dr. Lahey wasn't capable of doing a competent job in the making of these quotas, in the setting of these quotas? *Dr. Fishbein:* I think the Procurement and Assignment Board has done a most competent and efficient job all the way through.

Senator Pepper: And you would regard Dr. Lahey as competent to take into consideration these differentials, and when he says that he made a weighted quota for South Carolina you would think that he knew what he was talking about? *Dr. Fishbein:* That is correct.

Senator Pepper: And when he later came in and said that South Carolina had contributed 170 per cent of that quota then the conclusion is inescapable, is it not, that in some way or another there was not a proper coordination in the protection of the health of the armed services and of the civilian population? *Dr. Fishbein:* We began the war with the highest percentage of physicians to population of any nation in the world, approximately 1 doctor to each 700 people. We had a disproportionate distribution of those doctors, which is a fact that has been known at least since 1913, namely that it is the tendency of doctors to congregate in large cities. A disproportionate distribution of doctors has always prevailed in this country to a considerable extent, but there I want to be fair and say also that there are other disproportions in this country which have not yet been settled.

When you began to enroll doctors there seemed to be such a vast supply of doctors for an army in training of one million men—which was at first contemplated as every one knows—that no thought was given to the idea that we might strip any portion of the country.

Then, after Pearl Harbor, when we moved up suddenly to a concept of an army of four and a half million men in the armed forces, your demand became tremendously greater on all types of professional service, including doctors. Now, when you move up to seven and a half million there will be still more—

Senator Pepper (interposing): Yet it is a fact, is it not, Doctor, that so far, at least up until the present time, in the recruitment of doctors there has not been any overall authority which had weighed and measured the needs of the armed services and the needs of the civilian population and in the taking in of doctors taken into consideration the needs of both? *Dr. Fishbein:* The Procurement and Assignment Service has no authority to tell any doctor to go in or not to go in. They merely have the power of declaring that he is or is not essential in the position which he occupies, making that recommendation to a local board, which has the real authority. The authority rests with the local draft boards and there is no authority over men over 45 years of age at the present time, and that constitutes well over half of your medical profession.

Senator Pepper: And there has been no central authority so far which has considered the overall health needs of the civilian population along with those of the armed services? *Dr. Fishbein:* That is not true because the Procurement and Assignment Service, when established by the President, was definitely charged with considering just that distribution.

Senator Pepper: Then it hasn't functioned in that capacity, has it? *Dr. Fishbein:* I would say that it hasn't functioned 100 per cent. I know very few agencies that have. But I would say that it is functioning better all the time.

Senator Pepper: Yes, it may be functioning better but within the week Dr. Lahey testified before this committee that up until the present time there has been no consultation by anybody that he knows of, on behalf of the civilian population, as to the retention outside of the armed services of the number of doctors necessary to maintain the health of the civilian population. And you don't know, in your official position or with your wide knowledge, of any authority that has been permitted to speak authoritatively for the civilian population in preserving its quota of doctors, do you? *Dr. Fishbein:* Well, that is not quite correct either, for the simple reason that industry—

Senator Pepper (interposing): Who is responsible for 170 per cent of South Carolina's quota going into the service? *Dr. Fishbein:* I would say largely the general system of Selective Service having complete authority over men under 45 years of age.

Senator Pepper: Are you represented on Selective Service? *Dr. Fishbein:* No, sir.

Senator Pepper: Does anybody represent the civilian population, with respect to doctors, on the Selective Service Board? *Dr. Fishbein:* No, sir.

Senator Pepper: Then what I suggest is true? *Dr. Fishbein:* To that extent you would be correct.

Senator Pepper: So that the Selective Service boards are the representatives of the armed services for the acquisition of men, not the representatives of the civilian population? *Dr. Fishbein:* That is correct.

Senator Pepper: Now Doctor, does this Assignment and Procurement Service have representatives in the counties? *Dr. Fishbein:* It doesn't quite go down that far. I would say that many counties have representatives who are set up through their state agency, but they are just advisory. There are many counties in this country that do not have a representative of the Procurement and Assignment Service in them, some do and some do not.

Senator Pepper: You said that our doctors were like lots of other people and had gravitated into certain large centers so that we had a disproportionate distribution of doctors over the country? *Dr. Fishbein:* Yes, sir.

Senator Pepper: Now public health is a question of fact, is it not? *Dr. Fishbein:* Yes, sir.

Senator Pepper: It is a question of geography; the need for public health exists where the people exist? *Dr. Fishbein:* Well, the need for public health exists everywhere, whether there are people there or not.

Senator Pepper: We are not thinking about making the cactus more healthy, we are talking about people.

Dr. Fishbein: My point would be that a swampy area in a district where there were very few people might still be the breeding place for enough mosquito menaces, so your biggest health problem would be in that area with very few people.

Senator Pepper: Let's augment my statement by saying that the problem of public health is related to the needs of the people of the country and to those conditions which endanger the health of the people? *Dr. Fishbein:* Correct.

Senator Pepper: Now then, we are engaged, it has been said, in a total war, are we not, Doctor? *Dr. Fishbein:* Yes, sir.

Senator Pepper: Do you regard the health of the people as being essential to the effective prosecution of that war? *Dr. Fishbein:* That is vital to the effective prosecution of the war.

Senator Pepper: So we cannot, in your opinion, successfully wage this war unless we attend adequately to the health of the people? *Dr. Fishbein:* Correct.

Senator Pepper: Now, then, what plan has the American Medical Association been able to devise that would assure the public health of the people of the United States? *Dr. Fishbein:* That is the broadest question yet. In the United States we have a vast public health system beginning with the United States Public Health Service and including also the public health departments of the states and counties, where there are such available, and through the contact of the Procurement and Assignment Service with a special committee on public health, arrangements have been made to declare essential—so that they would not be taken up by the Selective Service boards—all important public health officials.

The Procurement and Assignment Service established a special committee on industrial medicine. There was also established a committee on industrial medicine with the Health and Medical Committee, which was a part of the Office of Defense, Health and Welfare. There is also an Industrial Medical Division in the United States Public Health Service. There is also a Committee on Industrial Health in the American Medical Association. No one man perhaps is a member of all four of these. Some men are on various committees. These various committees having to do with industrial health have given the most careful consideration to the problem of maintaining industrial physicians for all industries associated with the war effort. They have passed on the industrial physicians whose names have been sent either to the Local Procurement and Assignment office or the national Procurement and Assignment Service as key men necessary to the health of the workers in industry.

Many industries throughout the country have large industrial establishments; many have small industrial establishments. Great Britain has recognized the vital character of this problem by having a regulation that any industry employing more than 500 men should have a full time physician associated with that industry, and when they employ more men they should have additional physicians and should have an industrial medical service. We have not come to the point of regulation through any such federal agency, but we do have the general recommendation which has gone out from all of these committees on industrial medicine as to the manner in which industrial health should be maintained in this emergency.

But we have been confronted with the fact—and when I say "we" I mean all persons seriously concerned with all of these problems, because I have been concerned with them only as a man who gives public information as to what has gone on—we have been—

Senator Pepper (interposing): You don't mean that you work for the government? *Dr. Fishbein:* No, I edit a magazine; I am an editor.

Senator Pepper: For a group of professional men in the country? *Dr. Fishbein:* Yes, and I also do some writing for the public. One of the problems which has confronted the medical profession most seriously is the fact that this is a young man's war on the combat front. A doctor over 50 years of age falls to pieces under war conditions. Great Britain has said that a doctor over 40 years of age falls to pieces under combat conditions and cannot be put up at the front.

We have an armed force going out for this nation, an army, a navy and an air force. The Air Force is a new body which has already demanded upward of 8,000 doctors to meet the needs of that body. If we are to have an air force of 2,000,000 men, they will need more doctors; 8,000 will not cover their needs. They must have young doctors. If young doctors take positions in industry which can equally well be filled by doctors past middle age, the needs of the Army, the Navy and the Air Force, if reduced to a minimum, cannot be met.

Senator Pepper: What do you regard as the essential needs of the armed forces, how many doctors per thousand men? *Dr. Fishbein:* I say now that they are asking 6.5 men per thousand. But if they reduce that to what Great Britain has, 4.5 per thousand, there would still not be enough young doctors to meet their needs if young doctors, men under 37 years of age, take jobs in industry in order to avoid military service.

Senator Pepper: Are there any doctors in the armed services engaged in administrative work? *Dr. Fishbein:* By a joint directive from the Joint Army and Navy Board, both Army and Navy medical departments have been instructed to take from the desk every doctor capable of giving medical service in the field.

Senator Pepper: Well now, Doctor, suppose that you should find doctors occupying key places in industry, that is the maintenance of the health of the employees of companies that build ships and cannon and airplanes and the implements of war, then it would be the old question of determining which is more important, the man or the gun, wouldn't it? *Dr. Fishbein:* Senator Pepper, that question has been given the most careful consideration by groups of the leading industrial physicians in the United States, and I mean the industrial physicians for organizations as large as General Motors, du Pont, Chrysler and Ford. All these men who are the leading industrial physicians in the United States have sat on these boards, which are making the decisions as to what constitutes an essential physician in industry.

Considering this matter purely as a matter of general information, the kind of knowledge that any man can have, it is quite obvious that a man who has built up an industrial organization for a great industry of the scope of General Motors or du Pont, and who has all of his physicians of various grades and specialties rendering service, does not wish, in wartime, to see one man moved out of that job.

We didn't like the idea of taking what I would say were seven key men from the headquarters of the American Medical Association because we have to take in other men, older, and train them to fit jobs for which we have trained men for ten and fifteen years. But we made a decision very early that if the armed forces needed a man he was to go, and we would take an older man and train him in the job.

Senator Pepper: Now who knows more about the public health, the armed forces or competent people who have the responsibility for the maintenance of our industrial operations, and the people who are in direct touch with the public health?

Dr. Fishbein: I would agree with you at once that the leading industrial physicians of the United States know much more about industrial medicine than I do, and these decisions have been made by the leading physicians in industrial medicine in this country.

Senator Pepper: You mean the decisions in a local draft board? *Dr. Fishbein:* I mean the decisions having to do with the standards which should determine whether or not a physician in industrial medicine was or was not an essential man in that position.

Senator Pepper: Well, now, the man who is the head of a particular medical unit would also have some very important knowledge on that subject, would he not? *Dr. Fishbein:* The man who is the head of that unit, this being a democracy, has open to him four or five different methods of approach for carrying his problem to the highest point, namely Washington. He can carry his problem to the national Selective Service

System. When a draft board takes a man whom he considers essential, he is privileged to file an appeal; he can carry that to his appeal board; he can carry it from the appeal board to the national Selective Service System. And specifically, if there are 11 doctors under 37 years of age employed in any hospital associated with an industry, and if a draft board takes any 1 of those 11 who are essential to that industry, the man in charge has two methods by which he can retain the man. The man can appeal and the industry can appeal on his behalf, that is through the draft board route. Now through the Procurement and Assignment route he can again appeal to the state procurement officer; from the state procurement officer he can appeal to the corps area procurement board; from the corps area procurement board to the national board of Procurement and Assignment, on which the final decision would rest. Now if no such appeal has come up on behalf of any man from the agency that wants to keep the man, the fault cannot rest with the agency at the top, it must rest with the man who failed to file the appeal.

Senator Pepper: You mean that that is one of the methods he may pursue. Can you tell us how many men regarded as essential to the maintenance of health facilities have been kept out of the clutches of Selective Service by any of the Procurement and Assignment officials? *Dr. Fishbein:* Many hundreds.

Senator Pepper: Give us your best estimate? *Dr. Fishbein:* I wouldn't like to give an estimate, but I will file a definite statement with you as soon as I investigate the matter.

Senator Pepper: All right, we will be glad to receive that. *Dr. Fishbein:* I would have to make a special investigation on that point, but I can have the information for you.

Senator Pepper: Now in the various counties I believe you said there were representatives of the Procurement and Assignment Service? *Dr. Fishbein:* In some, not in all. There are, for instance, eight counties in the United States with less than 5 people to a square mile. No one attempts to handle that situation by setting up an organization. In some two thousand counties there are probably men who would act for the Procurement and Assignment Service, or committees of men, in grading doctors as essential or as not essential.

Senator Pepper: Dr. Lamb has some questions.

Dr. Lamb: In connection with your point of a moment ago, Doctor, essential physicians in industry such as you were describing are not limited to those employed specifically by the large industries; that is to say, the health of industrial workers depends very largely on the average individual physician in a given community, or a member of a hospital staff, or what not? *Dr. Fishbein:* Yes, sir.

Dr. Lamb: Appeals on individual cases in other parts of the Selective Service, which I think this committee has already determined are not well protected by the present occupational deferment machinery, are no substitute for the good working of a system in which the overall plan is adequate—you would agree with that? *Dr. Fishbein:* That is absolutely right.

Dr. Lamb: So that your statement of a moment ago that these deferments might be secured for individuals is not, in your estimation, any substitute for the adequacy of the plan? *Dr. Fishbein:* Oh no. To move on to that next step which you have just raised, I am convinced that there must be and will be—of course if this war lasts—an overall control over all professional and trained personnel. There must be, because in no field is there a sufficient number of men to meet the special needs created by an army of the size proposed.

Dr. Lamb: Right on that point, we have at the present time about 40,000 physicians, you said, in the armed services? *Dr. Fishbein:* Yes.

Dr. Lamb: And I take it from what you said that they are the great majority of those under 40? *Dr. Fishbein:* Yes, it is about half of those under 40. The average age of graduation is 28 years, and they graduate each year between 5,500 and 6,000 doctors. They take one year of internship before they are considered competent, and then if they care to go into a specialty they must take a residency. All that is being looked after, that is the maintenance of a minimum number of residents, and the maintenance of a minimum number of interns—that has all been given thought. In the twelve year period it would give you 72,000 doctors under 40, which is just about right.

Dr. Lamb: Now if we have a seven and a half million man army, as stated by Secretary Stimson as the goal for 1943, that would mean that if all those who are serving in the armed services are in that category of under 40 you will have all of the doctors of that age; is that correct? *Dr. Fishbein:* Fortunately for us they are not all under 40 and the exact figures are available as to just how many are now in the armed forces and in the civilian population, under 40 and above 40.

Dr. Lamb: Would you give them to the committee? *Dr. Fishbein:* I will leave them with you. For every five year age group beginning with the first year of the medical school and upward, as high as they go, we have all the doctors of this country classified—

Dr. Lamb: Dr. Lahey testified that out of that 176,000 you would not classify more than 120,000 of them as effective physicians.

Dr. Fishbein: That is, effective for all purposes. Now we classify, for example, a bare 30 per cent of the men over 65 as effective for all purposes, and when you get over 70 that would drop still further. Under 35 years of age, 42,671 physicians; from 35 to 44, 41,558 physicians; from 45 years to 54, 31,399 physicians. Now that gives you, let us say, under 45 about 84,000 doctors, effective doctors, in the country, and they would be considered, let us say, effective for all purposes, the men under 45 years of age.

Dr. Lamb: What part of those are included in the 40,000 or more in the armed forces? *Dr. Fishbein:* I would say that the large majority of them are included in the 40,000, but you see there is a total there of 85,000 doctors, so there is still half of those left.

Dr. Lamb: In other words we have approximately 45,000 doctors, or less, now available and considered to be in their prime, for the service of 120,000,000 people? *Dr. Fishbein:* Again that is not quite right for the simple reason that the age period from 45 to 55 gives you 32,000 doctors and from 55 to 65, 30,000 doctors. Now the effective age for the civilian population, perhaps the best age for the civilian population of the doctor is 55 to 65.

Dr. Lamb: If I may interrupt, you have now given us 143,000 doctors under 65, and a moment ago we were discussing the possibility that only 120,000 physicians in the country were effective, and that gives us at least 23,000 who are not in the effective class. *Dr. Fishbein:* If you want to class all of the officers of the United States Public Health Service as not in the effective class—

Dr. Lamb (interposing): We are concerned with their effectiveness for the purpose of caring for the civilian population and your figure of 1 to each 1,500 was based on that.

. . . . . .

Dr. Lamb (interposing): The testimony of Dr. Lahey the other day indicated that he believed the figure in South Carolina was 1 to 4,100 before the war started.

Dr. Fishbein: In certain areas. He certainly couldn't possibly have said for South Carolina as a whole because that is not the fact and I am quite sure that Dr. Lahey wished to bring out the facts. I will give you South Carolina as of—

Dr. Lamb (interposing): Let us leave the question of South Carolina for a moment—

Dr. Fishbein (interposing): I have it right here, it is not too much trouble. I have my population tables here and it has to be calculated from that.

Dr. Lamb: Let's take the question of those areas within South Carolina and Texas and Oklahoma where the ratio is not 1 to 4,100, but there are some areas where it is 1 to 7,000; there are areas like that? *Dr. Fishbein:* Yes.

Dr. Lamb: That has not, however, stopped the Procurement and Assignment Board from taking doctors from those areas, nor has it stopped the recruiting teams from entering such areas? *Dr. Fishbein:* No, that is not true; the recruiting teams have already been withdrawn in forty-three states.

Dr. Lamb: I am not concerned with the fact that they have now been withdrawn, but with the fact that they have visited such areas and have recruited from them. How long ago were they withdrawn? *Dr. Fishbein:* Early in October.

Dr. Lamb: Commander Lapham testified that there were still perhaps four or five recruiting teams in certain states. *Dr. Fishbein:* Yes, New York, Pennsylvania, Massachusetts, Illinois and California.

Dr. Lamb: To get back to the main point, you said that as of Pearl Harbor we began a much greater recruitment of doctors? *Dr. Fishbein:* Correct.

Dr. Lamb: We had at that time an army of about a million? *Dr. Fishbein:* Yes.

Dr. Lamb: Is there any reason why, at that time, it should not have been foreseen what the effect of taking 40,000 physicians from the communities into the armed services would be? *Dr. Fishbein:* You are criticizing the government for not foreseeing many things that have not been foreseen?

Dr. Lamb: I am raising the question as to the operations of the Procurement and Assignment, operations which, as I understand it, were based on previous plans worked out with the American Medical Association and carried out in the Procurement and Assignment by members of the American

Medical Association—*Dr. Fishbein* (interposing): You are making about four assumptions which have no basis in fact.

Dr. Lamb: Thank you. Will you state your corrections? *Dr. Fishbein:* You are assuming, in the first place, that the American Medical Association drew up plans for controlling the overall distribution of the medical profession in the United States, and they didn't.

Dr. Lamb: I am not assuming anything of the sort. *Dr. Fishbein:* It is in your question, if you will have the record read.

Dr. Lamb: I am assuming that originally the plans worked out for Procurement and Assignment are those which were worked out through the operations of your county by county and state by state estimating system, is that correct? *Dr. Fishbein:* They declared certain doctors available and certain doctors unavailable, but—

Dr. Lamb (interposing): And this is the framework under which Procurement and Assignment has gone on. What sort of protests has the American Medical Association made with respect to the continuation of enlistment of doctors? *Dr. Fishbein:* There have been letters that have gone forward to the Surgeon General of the Army and to the Secretary of War. As rapidly as it appeared that in certain areas the condition was becoming what would ordinarily be called tight, authorities representing the armed forces were informed of the fact that in certain areas of the country conditions were becoming tight and that some action should be taken. But that action had to be taken by federal agencies.

Dr. Lamb: But no effort was made to request that enlistments stop entirely and that some other system be substituted? *Dr. Fishbein:* The withdrawal of the recruiting teams was not a matter of a single action suddenly withdrawing all the recruiting teams. Just as soon as it was apparent that recruitment should stop in certain areas, it stopped in those areas, even by direct recommendation from the corps area commander, who, under our present system of Army control has the control, in his corps area, over the recruiting teams.

Dr. Lamb: Would you testify, Doctor, that in January of this year it was impossible for the American Medical Association to foresee the effects of enlistment? *Dr. Fishbein:* I think that they were clearly understood in January of this year by the Procurement and Assignment Service.

Dr. Lamb: Were there any representations by the American Medical Association to either the Surgeon Generals or the Procurement and Assignment Service, demanding that in January enlistments should be stopped of doctors and that some other system should be substituted therefor? *Dr. Fishbein:* We are not in the habit of demanding anything.

Dr. Lamb: Were letters written along those lines? *Dr. Fishbein:* Yes.

Dr. Lamb: Will you furnish the committee with any letters to that effect written by the American Medical Association in January of this year? *Dr. Fishbein:* I think it would be more in order for you to request either the Secretary of War or the Surgeon General of the Army to produce such correspondence than to ask us to produce our correspondence with them, and I think that the Surgeon General would tell you that that matter has been looked after.

Dr. Lamb: Since this was a matter of initiative on your part it seems a correct request, but the committee, I am sure, will be glad to request that correspondence from these other sources. *Dr. Fishbein:* I am quite willing to ask the permission of the Secretary of War to send you the correspondence we had with him, if you wish to have it. I don't know where these authorities lie.

Dr. Lamb: I am sure that Senator Pepper would be glad to correspond with the Secretary of War to secure that correspondence. Now this question with respect to the ratio of 1 to 1,500: obviously that is an average and therefore has very little relationship to this 1 to 4,100 or 1 to 7,000, or whatnot? *Dr. Fishbein:* On that I agree with you.

Dr. Lamb: Yet it is your belief that quotas should be established for areas in which those ratios prevail and that further recruitment of physicians should be carried on through the Procurement and Assignment Board? *Dr. Fishbein:* On the contrary, I have stated to the Procurement and Assignment Service repeatedly, and indeed as late as yesterday, that a quota based on an overall quota for a state like Alabama, where they have one large city with a concentration of doctors in it, and a large rural area without a concentration of doctors, that the setting up of an arbitrary quota for the state of 1 to 1,500 would produce an inequitable and intolerable situation.

Dr. Lamb: You have so protested since last December repeatedly? *Dr. Fishbein:* Yes, that is true.

Dr. Lamb: Have you letters written to that effect over this period of time, or were those protests oral? *Dr. Fishbein:* I imagine I can find some written protests but the committee could call, if they wished, various individual members of the Procurement and Assignment Service to whom I have stated definitely that the answer for Alabama as a whole, for Florida as a whole, and for any of these states where they have one or two large cities and a large rural area, the answer is not by a state quota.

Dr. Lamb: You stated earlier that of course no one would have wanted South Carolina to be told that she should not send physicians to the Army. Is there any reason an overall plan might not have excluded, let's take for example, the state of South Carolina? *Dr. Fishbein:* The one reason for an overall plan that would be applied indiscriminately on a broad basis is the situation of permitting—and that still prevails—of permitting young men whom everybody knows ought to be in the Army to stay out of the Army. When you have an army that needs young men preferably for the kind of war that is being fought, when a considerable percentage of the army's needs supplied by physicians over 50 years of age, who perhaps should not be in at all but were needed to meet the army's needs; who therefore enlisted and who will be retained in this country in important posts in connection with training camps; when you got to a community as I did in Albuquerque, New Mexico, in Artesia, New Mexico, and in Wichita Falls, Texas, and in certain areas in Illinois, where numbers of old physicians have gone, and young physicians, under the statement that they were essential to some industry, or because they had one child or two children failed to enlist, you will observe that you destroy the morale of the group in that area.

I venture to say that is probably the chief difficulty of the doctors as a whole in the country at this time. Men under 37 are holding positions in industries, in industrial medical plants, and are holding those positions while much older men are going from those very communities to meet the needs of the armed forces.

Dr. Garfield: May I ask you a question, Doctor? *Dr. Fishbein:* Yes.

Dr. Garfield: Why couldn't men over 40 take care of the base hospitals in a thousand or so army hospitals in this country? How many of the younger men are in active service? Are you aware of the fact that the Seventy-Third Evacuation Unit has 40 of the best young surgeons in the country, it was formed in February, and from February until now they have been stationed in some small hospital in California doing nothing? *Dr. Fishbein:* I am essentially a civilian doctor and I venture to state that if you were to ask the United States Army Medical Department about the necessity for physicians in the armed forces and how it is proposed that they will use them, that the United States Army will be able to tell you why physicians must be in training.

I was asked on behalf of a physician from Boston who is a well known, competent ophthalmologist and who had enlisted in the Army, why that physician had been three months in a hospital and in a medical unit of the Army in Alabama without seeing any eye cases. But if the tank unit with which he had been associated was at that moment in Egypt he would be seeing more eye cases than he could possible handle, and he must be trained with his unit. You can't train him in Boston to go with a tank unit when that unit starts out.

Dr. Garfield: Do they train him in eye work, Doctor? *Dr. Fishbein:* They train him primarily in the functions of a medical officer in the Army. As far as I know—and again I am no authority on military medical service—it becomes essential in operating the armed forces to train men with the units which they are to accompany. You can't train a man in one place and then order him to the unit when the unit goes into battle.

Dr. Garfield: Isn't it true that there are forty base hospitals being built in this country, with innumerable army hospitals throughout the country, and couldn't doctors over 45 man those hospitals? *Dr. Fishbein:* They not only could, but there are many, many doctors over 45 doing that. I have seen a urologist whom I know to be 57 years of age working in one of those hospitals. I have been in areas in Florida, in army areas, within the past year, where I have seen gynecologists operating on soldiers. Those gynecologists enlisted in the Army. They were men well over 45 years of age, and they were enlisted with the definite idea that they would be retained in this country.

But again if we must have young men with the Army, if we must have men under 37 years of age, or at least under 40 years of age, to meet modern condition of warfare, and if the needs of the Army in combat are to be met, some overall agency must be concerned with utilizing the supply of young men and replacing them, as far as possible in civilian life and in the whole area, with older men. That is scientific handling of the men.

This is as good a time as any to correct a complete misstatement of fact. The policy has been adopted by the Procurement and Assignment Service, by the War Manpower Commission and, after adoption by them, approved by the American Medical Association, for the setting up of prepayment plans in all industrial areas where the needs of a rapidly growing industrial community demand that as the most efficient way of rendering medical service.

Dr. Lamb: Doctor, when was that adopted? *Dr. Fishbein:* That was adopted by the Procurement and Assignment Service Board at least three months ago; it was adopted by the Committee on War Participation of the American Medical Association about two and a half months ago; it was adopted by the Board of Trustees of the American Medical Association in the second week in September.

Dr. Lamb: Has it yet reached the Procurement and Assignment local offices? *Dr. Fishbein:* It was given out to the public and was given out to all agencies, as far as I know.

Dr. Lamb: And they are already acting on that to the best of your knowledge?

Dr. Fishbein: To the best of my knowledge. Any one that wants to find it can have a copy of it. This is a large country and there are 120,000,000 civilians to be handled. In a service that embraces hundred of thousands of people it is quite conceivable that some one man somewhere may not know everything that is going on. That is quite possible with respect to this man, whoever the person is, I haven't any idea with whom Dr. Garfield conferred on this matter.

Dr. Garfield: Three states, California, Oregon and Washington. *Dr. Fishbein:* If they will read the policy as it was adopted and has been published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, and released to the press and in other ways given out, the plan for meeting the civilian needs in relationship to medicine has been thoroughly discussed and carefully worked out and is already functioning in many places. I will give you if you want—I will put them in the record—the names of many areas which are already being supplied with doctors because they have a shortage of doctors, and these are being supplied by a voluntary system, by doctors who have volunteered to move to other areas, and some of them are going to such places.

Mr. Kaiser: Then I take it, Doctor, you believe in prepaid medicine? *Dr. Fishbein:* I believe in prepaid medicine to such an extent that our own employees are insured under a hospitalization plan.

Mr. Kaiser: And you support it whole-heartedly? *Dr. Fishbein:* I don't say all plans. I believe in prepayment plans that are set up on a legitimate basis; there are many strange plans set up on a peculiar basis.

Mr. Kaiser: We are assuming that they are legitimate; we wouldn't want anything that was illegitimate. The next thing is, if you were in my position and you couldn't get your men into a hospital and you were in an area, what would you do about it? *Dr. Fishbein:* Well. it all depends. This question was asked me by another committee before which I testified recently—

Mr. Kaiser (interposing): This is a specific case, we have —— men—*Dr. Fishbein* (interposing): In the first place I believe always in operating within the law, whenever possible.

Mr. Kaiser: We are agreeable to that. *Dr. Fishbein:* States have laws regulating medical practice so that it is impossible to bring a man into the state of Florida—and I mention Florida merely because that is one of the states that has the most rigid laws that exist in the country—

Mr. Kaiser (interposing): I would like to get back to where I was—you will get me lost. *Dr. Fishbein:* Washington, Oregon and California.

Mr. Kaiser: Yes. Here is the question exactly. I would like to get back to it because you are carrying me all over the country and I will be lost. What would you do about my specific case? *Dr. Fishbein:* If I were you I would ask my medical director to look into all the possibilities and not to try to solve the problem sitting where he is, but to go to the places where people have the information as to how the problem is to be solved.

Senator Pepper: You mean to come to you, Doctor? *Dr. Fishbein:* No sir, come to the federal agencies which are charged with this task, and that is the Procurement and Assignment Service in this case.

Senator Pepper: That are being run by the American Medical Association? *Dr. Fishbein:* Mr. Pepper, I would question that statement very strongly. If you can establish the fact—

Senator Pepper (interposing): Haven't you worked hand in glove with McNutt on this problem; you consulted with him on his speeches, didn't you? *Dr. Fishbein:* No, that is absolutely untrue. I have never seen—I can make this as a statement of fact, Senator Pepper—I have never seen in my life a speech of Mr. McNutt before it was written. I have published two of them after they were written.

Dr. Lamb: Dr. Fishbein, are you the chairman or director of information for Procurement and Assignment? *Dr. Fishbein:* I am Chairman of the Committee on Information. My purpose is to disseminate to the public—and this is the only function I have—through various press agencies and through medical periodicals the information which that agency wishes to send out.

Now, then, can you tell me any way in which the Procurement and Assignment Service could secure the cooperation and functioning of the medical profession without letting the doctors of the country know what their decisions were and how they function? Since obviously the publications which I edit, including medical and lay publications, are the best way of reaching the medical profession of the United States, the Procurement and Assignment Service would be operating inefficiently if it failed to utilize those legitimate means of publicity.

Dr. Lamb: And your services? *Dr. Fishbein:* Well, my services consist principally in this: When they send me a statement and say "Please give this publicity," I publish it in THE JOURNAL, I send it to all the other medical journals of the country, and I send it to the press of the country. Now if anything can be found wrong with that procedure, anything out of the way, which indicates any control over their actions, I would like to have you point it out.

Senator Pepper: How often have you consulted with the Procurement and Assignment agency or Mr. McNutt? *Dr. Fishbein:* When they had matters of publicity to be given out they sent them to me by mail in 95 per cent of the cases. I have been present at one or two meetings where they wished me to be present in order that I might give out publicity. I do not sit with the board at their meetings.

Senator Pepper: Getting back to Mr. Kaiser's question as to what you would do in his case in trying to provide medical attention—*Dr. Fishbein* (interposing): I know that Mr. Kaiser personally is not going out to hire doctors, he is going to ask one of his subordinates to handle the matter; that is obviously Dr. Garfield. Now if Dr. Garfield had utilized methods which other men in the state of Washington were utilizing to get doctors to replace the younger men, he probably could have gotten them.

Mr. Kaiser: I would like to make this point, and you will be glad to know this for your information, that in the Portland area we do have or did have that problem, but the doctors as a whole took hold of the problem themselves, organized all the hospitals and did render this service. We did nothing there, but that was not done in the other cities. Now what would you have where it was not done? *Dr. Fishbein:* What did Dr. Garfield do? Did he go beyond those people to any agency? As far as I know he has not taken the matter up directly with the national Procurement and Assignment office. Obviously if he had they are in a position to look into the picture. But I do not believe, personally, that they would be warranted in marking his young men "essential."

Dr. Garfield: We organized our medical service at Richmond before there was a Procurement and Assignment Service in the first place, and we chose people who we thought were ineligible for the Army as much as possible. *Dr. Fishbein:* But the Army thought differently?

Dr. Garfield: No, I beg your pardon, the Army now is reclassifying them. *Dr. Fishbein:* I mean the Army might think differently because they thought differently on a lot of things. The standards for the Army have changed greatly since December 7. We didn't take in men, before December 7, who had less than twelve teeth, so we had a 35 per cent rejection on account of teeth. Now we have got a 3 per cent rejection on account of teeth.

Dr. Garfield: We took men from all over the country, we got the best men we could. Now Procurement and Assignment says "You send all your men back to the Army and see if they want them," and that would break up our medical organization. There is one other thing. We had a shortage of beds in the area. Do you want us to go to the government and ask them for funds to build those hospitals? *Dr. Fishbein:* You have to ask them for materials, whether you ask them for funds or not.

Mr. Kaiser: No, they don't give you the materials.

Dr. Fishbein: How do you get them?

Mr. Kaiser: Priorities.

Dr. Fishbein: Do you know what the priority rating on hospitals is?

Mr. Kaiser: It is A-1 when it comes to shipbuilding, because that is the only way you can get the doctors you are talking

about, over there, by giving them a ship to go over in. I want you to get that clear.

Dr. Fishbein: I happen to know what Dr. Parran testified about concerning the building of hospitals. Now I know, and everybody knows, that in the new areas of industrial employment—

Mr. Kaiser (interposing): You are getting away from my ship.

Dr. Fishbein: No, I am not. In new industrial areas such as those with which you are concerned, because obviously you didn't have all those people there before we got into the war, there are a total of about 5,000,000 people in the United States who have moved for an industrial job as the result of the war. Wherever they have gone we need hospitals, we need one at Valparaiso, Florida; we need them out in Richmond, probably; and we need them in Vancouver—but it is impossible to build a hospital using private funds or government funds now without obtaining a release on essential materials.

Mr. Kaiser: We are doing it today, increasing our facilities.

Dr. Fishbein: I would say, Mr. Kaiser, that you are a very strong man and you get many things done that other men who are not quite so active do not get done.

Mr. Kaiser: That is a beautiful out! But again how can we get the young man over to do the fighting unless he has something to sail in?

Dr. Fishbein: And how can you get him to sail unless you have a doctor with him?

Mr. Kaiser: He therefore needs transportation and his health, and the health of the men that are building this transportation becomes fully as important as the men we send over.

Dr. Fishbein: Well, that is slightly debatable: whether or not a sailor or a marine who is fighting is more important than a shipbuilder, but I don't want to debate that.

Mr. Kaiser: Please, I asked you a question and don't give the answer from me, I ask you to give it for yourself. Is it important to have transportation? *Dr. Fishbein:* It is of the utmost importance.

Mr. Kaiser: And is it equally important to have the men there to build the transportation? *Dr. Fishbein:* It is important.

Mr. Kaiser: Is it equally important? *Dr. Fishbein:* Equally important?

Mr. Kaiser: Now the next question is: In that particular area where we didn't have that service, wouldn't you have created it? *Dr. Fishbein:* If I were there I would have had it.

Mr. Kaiser: I really think you would do a remarkable work if you would immediately get busy, where it isn't being done today, and see that they are taken care of; and rather than defending it, correct it. *Dr. Fishbein:* Pardon me, I am not defending anything. I am trying to show you that your statements have been made, and also those of Dr. Garfield, without a knowledge of what has already been done and is being done. You are concerned only with your little problem.

Mr. Kaiser: But it is only a model of them all, and I am now suggesting that you be concerned with them all and get this done. *Dr. Fishbein:* Suppose I told you that already we have reports from sixteen states in which there was said to be a shortage of doctors in certain areas that in ten of those states the shortages have been corrected. At Mobile, Alabama, the shortage has been corrected by furnishing doctors to meet the shortage.

Somebody has to make the decisions as to whether or not a young man under 37 years of age, in industry, who is a physician, is more important to that industry or more important to the armed forces. That decision cannot be made by the man who employs that young doctor in the industry. That decision must be made by an agency which is able to look at the matter in a completely unbiased way.

Senator Pepper: Would that agency be the armed services? *Dr. Fishbein:* No, by no means.

Senator Pepper: Aren't they the ones now making it? *Dr. Fishbein:* No, sir. The President's directive to the Procurement and Assignment Service and to the Office of Defense, Health and Welfare, which was Mr. McNutt's office at the time because that was before there was a War Manpower Commission, the President's directive to them said that they should have the consideration of an overall distribution of doctors to meet the needs of the armed forces, of industry and of the civilian population. And simultaneously with that there went an order to the Army Medical Department, the Navy Medical Department, the United States Public Health Service and all other agencies employing physicians telling them that this agency had been established by order of the President for that job, and that they would submit their requirements to the Procurement and Assignment Service, which would aid them in meeting their needs.

Senator Pepper: You indicate, then, that the President intended that the Procurement and Assignment Service should act as the overall agency for the selection of medical personnel, but you don't mean to say that they have performed that function, do you? *Dr. Fishbein:* They have performed it within the law as it now stands, which puts the burden of ultimate decision regarding any man's service, when that man is under 45, on the local draft board.

Senator Pepper: Well, then, the matter has not been decided by the Procurement and Assignment Service under the War Manpower Commission, it has been decided by the local service boards? *Dr. Fishbein:* The local draft boards. All matters of essentiality and the ultimate decision of forcing a young doctor into the Army have rested with the local draft boards.

Senator Pepper: So the President's directive has not been carried out, it has not been effective? *Dr. Fishbein:* It has been more effective in relationship to medicine than any similar effort in relationship to anything else.

Senator Pepper: Well, in spite of that fact you have some states where more than 200 per cent of the quotas of the doctors have been taken in, and in a state like South Carolina you have 170 per cent and in a state like Alabama 190 per cent who allowed that to happen? *Dr. Fishbein:* Well, it is still a free country—that is what permitted it to happen. The fact is that a man under 45 is under the control of the Selective Service board; a man over 45 is not under anybody's control in the United States.

Senator Pepper (interposing): They were allowed to volunteer, then? *Dr. Fishbein:* Yes.

Senator Pepper: Was that decided by the Procurement and Assignment Service or by the armed forces accepting them? *Dr. Fishbein:* The armed forces obviously accepted them. But keep in mind your dates again! Keep in mind that the directive for the Procurement and Assignment Service did not begin until the end of October 1941.

Senator Pepper: How many doctors had been taken in by that time? *Dr. Fishbein:* I will have to submit these individual figures to you; they are all here on the tables, and I will answer all your questions when I get the record.

Senator Pepper: Roughly how many had been taken in? *Dr. Fishbein:* Into the Army and Navy by October 1, 1941?

Senator Pepper: Yes. *Dr. Fishbein:* I would say roughly between 15,000 and 20,000, and 20,000 more came in between January 1942 and September 1942.

Senator Pepper: So that the shortage that the civilian population now experiences is due to the number that have gone in since that time, substantially? *Dr. Fishbein:* Very likely.

Senator Pepper: And now the question is as to whether we are going to allow that hit and miss system to continue to operate, or whether the President's directive is going to be made effective and some overall agency shall determine the needs of the Army and the needs of the civilian population? *Dr. Fishbein:* I would say that it operates effectively except for the unpredictable actions in certain areas of local draft boards. It operates effectively now; it didn't operate effectively before.

Senator Pepper: You mean that it operates effectively only to the degree that the local draft boards and the armed services allow it to operate? *Dr. Fishbein:* The armed services are giving complete cooperation—

Senator Pepper (interposing): They are not giving complete cooperation if the draft boards which represent the Army are doing something that is not a part of a comprehensive plan for the whole country. *Dr. Fishbein:* I would say that to the extent—

Senator Pepper (interposing): The truth of the matter is that we haven't had a plan so far; the President may have intended to set up one when he created the Procurement and Assignment Service, but up to a few days ago, at least, there hasn't been a national plan for the Procurement and Distribution of doctors to assure public health to the civilian population? *Dr. Fishbein:* I don't think such a statement could be made with all the facts before you.

Senator Pepper: Where has it been operating, then? *Dr. Fishbein:* Suppose we had done what we did in World War I—

Senator Pepper (interposing): I am not asking you to suppose. Where has there been an overall authority that has been looking at this picture as a whole? *Dr. Fishbein:* You mean an authority to pick up doctors and move them around?

Senator Pepper: To say what doctors shall come in and what doctors shall stay out. *Dr. Fishbein:* The recommendation has been made in inumerable instances that certain doctors stay out, and the vast majority of Selective Service boards have respected those recommendations.

Senator Pepper: But they were pure recommendations and didn't have any authority? *Dr. Fishbein:* Only recommendations.

Senator Pepper: Now, Doctor, to get back to this group health insurance. You heard the testimony of Dr. Garfield that the head of Procurement and Assignment in the state of Washington raised objection to their medical facilities being extended to the members of the families of their employees. Are you prepared to state from personal knowledge that that is not the fact? *Dr. Fishbein:* No, sir; I would like to look it up, though.

Senator Pepper: All right, you have that privilege I am sure.

Dr. Garfield: Incidentally that is not only on the prepayment plan, but they wouldn't let us take care of them as private patients.

Dr. Fishbein: I would like to ask you who stopped you, Doctor, from taking care of anybody? Did you try to take care of civilians and have them stop you?

Dr. Garfield: We were afraid to because they said—

Dr. Fishbein (interposing): Oh, now, Mr. Kaiser wouldn't be afraid.

Dr. Garfield: They stated that if we were to do that they would declare our doctors nonessential; they were cooperative up to that point.

Dr. Fishbein: Did you read that part where they said they would declare your doctors nonessential? *Dr. Garfield:* No.

Dr. Fishbein: You haven't that in writing? *Dr. Garfield:* No.

Senator Pepper: Doctor, let me ask you this. The man who is reputed to have made that statement was head of the Procurement and Assignment for the state of Washington? *Dr. Garfield:* Yes, sir.

Senator Pepper: He had the power to make recommendations as to who was essential and who was nonessential as a doctor, did he not? *Dr. Garfield:* Yes, sir.

Senator Pepper: And that was the only governmental agency there was to make such recommendations, was it not? *Dr. Garfield:* Yes, sir.

Senator Pepper: And you assumed that if the doctors had violated the restraint that he had imposed, he would have had the power to have recommended that they be regarded as nonessential? *Dr. Garfield:* Yes, sir.

Senator Pepper: And that that recommendation would have been observed by the War Manpower authorities and by the Army Recruiting Service, emanating from Washington? *Dr. Garfield:* Yes, sir.

Dr. Fishbein: I would say that no man has that authority; that he has never been given any such authority by any agency that I know anything about.

Senator Pepper: You mean that the Procurement and Assignment representatives in the states do not recommend as to whether a man is essential or nonessential? *Dr. Fishbein:* They have no authority to say to any man: Unless you do thus and so I will make you essential.

Senator Pepper: Do they have the authority to recommend to the Selective Service authorities those who are essential and those who are not essential?. *Dr. Fishbein:* They recommend—

Senator Pepper (interposing): They do have that authority? *Dr. Fishbein:* They recommend under an established policy of the national Procurement and Assignment Service.

Senator Pepper: But they do have the power to go into a community and say "That man is nonessential" and "That man is essential" and to make that recommendation to the Selective Service authorities? *Dr. Fishbein:* They have that authority.

Senator Pepper: Now if that official chose to give furtherance to a policy of the American Medical Association against the particular kind of group health, and if he was, in furtherance of that desire, to designate a certain doctor as being nonessential, in all probability you say that the local draft board would take that man into the service if he was within the eligible age limit? *Dr. Fishbein:* I will have to come back first to the statement that the American Medical Association has such a policy—they have no such policy.

Senator Pepper: I am not asking you that. I ask you if that Procurement and Assignment official were to make that recommendation to the Selective Service authorities that a particular doctor was nonessential, would the Selective Service authorities not in all probability take that man into the service? *Dr. Fishbein:* That is correct.

Senator Pepper: Do you think it is wholesome public policy for the government to have as its representative in the selection of medical personnel a man who is in a position, at least, to further private interests by what he does? *Dr. Fishbein:* Well, that would involve, if a different policy was adopted, the destruction of the entire Selective Service system.

Senator Pepper: Would it be the Selective Service system or the system of the American Medical Association that would be disrupted? *Dr. Fishbein:* The American Medical Association has no system in relationship to these matters.

Senator Pepper: No. I am asking you would it not be appropriate for decisions of that character to be made by some official who has no personal or professional interest in the matter? *Dr. Fishbein:* The decision now rests with the Selective Service, which determines whether or not the man is or is not essential.

Senator Pepper: But the Selective Service, as you have said, in the selection of medical personnel relies on the recommendations of the Procurement and Assignment Service? *Dr. Fishbein:* I would say that in many instances they consider that that is authoritative, reliable evidence.

Senator Pepper: If they do—and you put into that place a representative of the American Medical Association—that man has the power, at least, by his action, to further a personal and professional interest, does he not? *Dr. Fishbein:* I would say that wherever you put a dishonest man or one who does not deal justly, you have trouble.

Senator Pepper: But, generally speaking, you try to disassociate a public official's functioning with his personal interest, do you not, or from his personal interest? *Dr. Fishbein:* I venture to say that practically every representative physician, whether or not a member of the American Medical Association, who today is charged with the duty of declaring that some men are essential and others are not essential, is carrying that out in a more high minded and idealistic way than it possibly could be carried out by any other official.

Mr. Kaiser: Senator Pepper, I think that the Doctor would be glad to know this: This is a conversation between Dr. Cutting and Dr. Fletcher, who is chairman of the State Procurement and Assignment Board of the state of California, and I will read just a portion:

> Dr. Fletcher said that, as for the program [speaking of our program] as a whole, it was not his place or jurisdiction to question the ethical end of it although he was against corporation medicine of which this is a type [this is right along the lines of your thought]. He thought that the California physicians' service and medical profession themselves should take care of it. If this group (which is our group) went into the coverage of the new housing projects going on in Richmond, he would be very much opposed to it.

Dr. Fishbein: He has a right to be opposed to it.

Mr. Kaiser: Now you maintain that he is not human and being opposed to it would therefore, even though he is not human, and being seriously opposed to it—we have frankly felt very much his attitude of opposition. I don't declare him dishonest, but he is not in favor of it and still he governs, through his recommendations, the men that we can or cannot have, and Dr. Garfield feels that he is doing him a great harm.

Dr. Fishbein: I will say again, and say it as simply as possible, that an attempt has been made, as nearly as I can judge it, from observing what has been done, an attempt has been made to administer this recommendation of who is or who is not essential in a certain area, with strict regard for the functions that the physicians were carrying out I could give you innumerable cases. It is without regard to any question of competition in practice, distribution of practice, among the people who remain, or any such matter.

But the policies of the Procurement and Assignment Service on a national scale have held that inasmuch as this is a war in which primarily the services of younger men are needed with troops in the field, that young men under 37 years of age who take full time positions in industry, in teaching, in research, with medical organizations or in any other way, and because they are holding such a position avoid being called into active service with the troops, that those young men must be subject to some higher agency than the industry itself. They have adopted a policy. When you could show that a young man—as is the case with Dr. Garfield, who is himself a young man—when you can show that a young man is your key man, that is all very well. But when you have a doctor under 37 years of age and you hold him because he is a specialist in nose and throat diseases, or you hold him because he is a specialist in urology, or you hold him because he is a specialist in obstetrics and a part of your organization, then obviously this higher agency which is looking toward the fact that we must win this war as our prime effort, and that we have to have young men to win the war, simply has to decide on a different level.

Senator Pepper: Mr. Weber wants to ask a question on that point.

Mr. Weber: On that point, what particular function do obstetricians serve in the armed services?

Dr. Fishbein: A very good point. The United States government has set up a system whereby the wives of all soldiers, privates, in the Army, if they become pregnant and if they are in the vicinity of a camp, may have their deliveries in the hospitals of the Army. I have seen the nurseries in at least a dozen army hospitals filled with infants. I happen to know that there are hundreds of obstetric cases scheduled during the next eight months at Fort Knox; there are 90 cases a month scheduled in Beaumont Hospital at El Paso, Texas—and that prevails all over the country.

Mr. Kaiser: Old men that are falling to pieces can do that, Doctor, like you and I.

Dr. Fishbein: They are using old men for that.

Dr. Lamb: What portion of the obstetricians now serving with the armed forces are being used for obstetrical purposes?

Dr. Fishbein: I will have to check on that figure.

Dr. Lamb: Would you say it was as much as 25 per cent?

Dr. Fishbein: I think they are being assigned to that and the care of these children.

Dr. Lamb: To date would you say that 25 per cent of those now serving with the armed services were so employed?

Dr. Fishbein: I think that would be reasonable, but there is still an expectancy in obstetrics.

Dr. Weber: Do you know how many expectancies there are in the city of Washington?

Dr. Fishbein: I should imagine quite a few—I have some clippings here.

Dr. Lamb: Has the American Medical Association made any effort to determine the use being made of doctors in the armed services?

Dr. Fishbein: We know the use that is being made. The reports are obviously available to various agencies like the Procurement and Assignment Service. On an average two to three complaints a week come to my desk from doctors in the Army and Navy to the effect that their services were not being used to the best possible advantage. I have one or two right with me.

Dr. Lamb: You have investigated those? *Dr. Fishbein:* Every one has been investigated.

Dr. Lamb: And you are satisfied that they are not correct? *Dr. Fishbein:* Where they have not been correct I not only have investigated them personally but I have sent information to the Surgeon Generals of the Army and Navy, giving them only the area, and wherever possible the man has been moved.

Dr. Lamb: How long has the Massachusetts General unit been serving in Florida? *Dr. Fishbein:* I couldn't tell you.

Dr. Lamb: Has it been there since January? *Dr. Fishbein:* I couldn't tell you where it is at all.

Dr. Lamb: Do you know what use is being made of the Massachusetts General unit at the present time? *Dr. Fishbein:* I can find out.

Dr. Lamb: I have information which leads me to believe that that, and a number of other units, are doing virtually nothing; that, for example, doctors who have been accustomed to operate as much as eight or ten times a day have not done that many operations since they entered the armed service. *Dr. Fishbein:* I knew that question was coming. The only way I can answer it is to ask you this question. Suppose the General Staff or the Joint Army and Navy Board, or even some higher group, were to decide that it was time to start a so-called second front and that we were to mobilize a million and a half men for immediate shipment as rapidly as they could be shipped, as rapidly as Mr. Kaiser could get the ships ready. Suppose they were to start to move them as fast as possible. And suppose that in order to get all these men ready for this movement we made effective, ordered into active duty, every hospital unit that had definitely been enrolled in the Army by that section, which is under Colonel Fitts. Suppose we got them all organized and ready to go and then suppose that the Grand Board of Strategy decided "Well, we can't go yet, this isn't the time," for some reason or other, "We may go next month or the month after." Then this army board is confronted with the proposition Shall we order all these doctors back home in civilian life or shall we hold them one month or two months so that they can be ready?

Dr. Lamb: Or five or six months?

Dr. Fishbein: That is up to the Army. I will say again that I know nothing about military affairs and that I feel that in time of war the people at the top, including the Commander in Chief, must make those decisions.

Dr. Lamb: But these decisions are relative to the civilian population, and you have a definite interest in that matter?

Dr. Fishbein: I have the interest—

Dr. Lamb (interposing): There are already 40,000 doctors in the armed forces. If we maintain the present ratio, and there is to be a seven and a half million army we will have over 70,000 doctors in the armed forces, and if we have a 10,000,000 man army we shall have over 100,000 doctors in the armed forces. What would you say was the proper ratio of doctors to the population, which was the absolute minimum, and how much further can we go in that direction?

Dr. Fishbein: I have observed what has happened in Great Britain and I know what is happening in Russia, and I would say that since we have set up an agency which knows more about the total available doctors than anybody else, they have the assets and the needs, they know what the picture is, nobody else knows it as well as they do—

Dr. Lamb (interposing): If I may interrupt you, may I say that that knowledge has not materially affected the question of these withdrawals on this scale, because either enlistments or selective service, as you said, have previously had the prior authority. So that this agency with full knowledge, if it has such knowledge, has not been able to affect the outcome of these decisions?

Dr. Fishbein: I would say that it is within the authority of the Army to change its ratios any time they find it is necessary or desirable.

Dr. Lamb: Would you have any opinion with respect to desirable ratios?

Dr. Fishbein: I would not have the impudence to say that. I would say to the Army "The situation in civilian life is becoming critical and will you, if it is at all possible, economize on your use of doctors so as to leave the utmost possible for the civilian population?"

Dr. Lamb: How recently have you said that to the Army?

Dr. Fishbein: I must have said that in personal conversations or in writing many times.

Dr. Lamb: What was the first date at which you said that?

Dr. Fishbein: Well, I think the first date at which I said it was in 1940, in June, when we had a joint meeting with representatives of the Army and Navy and the United States Public Health Service, at which time we pointed out that we had just so many doctors and that sooner or later we would have to have definite quotas for each group to be served, the armed forces and the civilian population.

Dr. Lamb: Why "sooner or later"; why not at the start?

Dr. Fishbein: Because at the start we had an excess of doctors in relation to the population of the country as a whole.

Dr. Lamb: Purely statistical?

Dr. Fishbein: I agree that there were certain areas that were without doctors, there always have been certain areas without doctors. But there are certain proposals that are being made in relationship to meeting these needs, which are so close to a totalitarian concept of government and so far from a democratic system of government that one opposes them on that basis.

Dr. Lamb (interposing): In other words, Doctor, you feel that the proposals which are being made, some of them, are so extreme that it is preferable to go to the other extreme?

Dr. Fishbein: No, I have never said that. It is an old rule of mine in hearings never to permit the questioner to put words in my mouth, so I prefer that you do not tell me what I propose. I will tell you what I propose.

Dr. Lamb: I am asking you to tell me what you propose. *Dr. Fishbein:* I propose, obviously, that the mechanisms which have been assigned by this government to meet this situation be utilized to the utmost.

Dr. Lamb: And revised? *Dr. Fishbein:* As needed.

Dr. Lamb: How would you revise them immediately? *Dr. Fishbein:* Already, wherever a shortage of physicians has been made clearly apparent—and we are conducting, incidentally, innumerable surveys, I have here the survey of the Public Health Service, of the Bureau of Economics, of the Procurement and Assignment Service, surveying all these areas—

Dr. Lamb (interposing): But your decisions with respect to these surveys have been made on the previous assumption that the ratio of 1 to 1,500 for the United States as a whole can be applied in some fashion to these areas of shortage? *Dr. Fishbein:* I believe, if you had asked Dr. Lahey that, he would have told you that that was certainly not the concept. Just yesterday the Committee on Allocations of the Procurement and Assignment Service determined that in any area where such a decision had to be made where there was a large city, and then a big rural area where you might get to 1 to 7,000, that obviously you would have to correct all your figures on that area on the basis that the large city was sucking in all the doctors and that special arrangements had to be made to meet those rural situations.

There is a physician in North Dakota who serves a rural area. He serves a radius of over 200 miles from his office. The only way he can serve that, obviously, is by motor car.

If you today took that away, he couldn't serve any of the area except what was right next to him. The only way he can serve that area by motor car is to travel as rapidly as he can possibly travel, and to have snow-tires in winter, and to have enough gasoline to permit him to move. Unless you grant that doctor extra snow-tires in addition to the five tires that he is allowed, and unless you grant him enough gasoline to cover his area, you decrease his capacity by 90 per cent.

Dr. Lamb: Yes, Doctor.

Dr. Fishbein: Now there are federal agencies which have already forbidden him to have snow-tires; they said "If you get two snow-tires you will have to give up two of your other tires."

Dr. Lamb: In that situation, wouldn't it be a good thing for the Procurement and Assignment Service to have some sort of responsibility for his getting those tires? *Dr. Fishbein:* I am not sure what service ought to have it, but the way I go about getting it is according to Mr. Kaiser's technic. I see the Tire Administrator and say "We have no responsibility or authority, but we have publicity, and if you persist in what seems to us to be a rather odd attitude, we shall publish these facts."

Senator Pepper: You mean you personally? *Dr. Fishbein:* I would send him a letter and I would say that THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION feels—

Senator Pepper (interposing): I was interested in the initiative that you, as a private citizen, exhibited. You mean you, as the editor of THE JOURNAL, are going to take the responsibility for the enforcement— *Dr. Fishbein* (interposing): No, only the publicity.

Senator Pepper: But you want to be the whipping boy that will see to it— *Dr. Fishbein* (interposing): I can write a letter to the New York *Times*, as many other people do, and get the publicity; they would print it, I wouldn't have to print it in THE JOURNAL.

Senator Pepper: It is interesting that you, in your capacity as a paid representative of the American Medical Association, would exhibit the initiative that you— *Dr. Fishbein* (interposing): I have always exhibited the utmost initiative of which I am capable in matters affecting the public health.

Senator Pepper: I think the poor condition of public health in the United States probably proves you are correct in what you have said. *Dr. Fishbein:* Now the next step, Senator Pepper, concerns a doctor who is a pediatrician in a small town in Illinois. He draws his pediatric practice from an area in that neighborhood of a little over a hundred miles. The farm women bring in their babies to this pediatrician. As far as I know, no method has been provided for permitting farm women to bring their babies in to where the doctor is. In other words, they also must exceed their total ration of gasoline in order to bring the baby to the doctor.

Dr. Weber: Are pediatricians being taken into the Army? *Dr. Fishbein:* All classes of doctors are being taken into the Army.

Dr. Weber: I wanted to go back to the question of obstetricians. You mentioned that some of them are being used in their particular specialized professional capacity in dealing with the wives of privates around cantonments? *Dr. Fishbein:* Yes, sir.

Dr. Weber: And it has been the policy of the War Department, since the beginning of the Selective Service Act, to request that privates' wives not come to the camp areas. *Dr. Fishbein:* That is right.

Dr. Weber: They have provided some housing for officers' wives, but in the main we will say that 90 per cent of the wives of privates are remaining at home? *Dr. Fishbein:* That is correct.

Dr. Weber: So that the question of bringing children into the world, and their proper care in infancy, is a very critical question in American public health? *Dr. Fishbein:* And you are, of course, familiar with the actions taken by the Bureau of Maternity and Infant Welfare in relation to this obstetric service?

Dr. Weber: And yet we find that the Army is taking obstetricians and pediatricians into the Army in the same proportion and ration that they are all other doctors. *Dr. Fishbein:* Well, I know innumerable obstetricians and pediatricians who are in the Army. I would say that it is very likely—in fact, I have the evidence here of a number of areas where there is now a shortage of obstetric talent.

Dr. Weber: Washington, D. C., I think, is one. *Dr. Fishbein:* In Germany they have a "fuehrer" for medicine in addition to Mr. Hitler. This "fuehrer" for medicine has decreed—as it is quite conceivable we might sometime have in this country—this fuehrer has decreed that a woman with a normal obstetric condition shall not have a physician, that the case shall be handled by some other group in the population, because the German army is so short of doctors. It is reported that, because of a very large number of wounded, they have had to withdraw from their medical group great numbers of doctors who were serving civilian populations.

Senator Pepper: Doctor, let me interrupt you. In the United States do you have any statistics on the number of deliveries that occur in the several states in normal times in this country by midwives and not by doctors? *Dr. Fishbein:* Oh, yes.

Senator Pepper: Take my state of Florida, for example. Are the majority of child deliveries in normal peacetimes by doctors or by midwives? *Dr. Fishbein:* That varies state by state, depending on the number of doctors available, the number of whites versus colored population. For instance—

Senator Pepper (interposing): Do you happen to know those figures for Florida? *Dr. Fishbein:* I think I can give it to you in the generalization, and I can get you the exact figures and—

Senator Pepper (interposing): Do you think the majority of deliveries are by midwives or by doctors in Florida? *Dr. Fishbein:* I would say that the state of Florida holds pretty well to the country as a whole, that the vast majority of deliveries of white women are by physicians, and in hospitals and that the majority of deliveries of Negroes are not in hospitals and not by doctors.

Senator Pepper: If you will, will you put in the record information to show for the country, and state by state, how many deliveries are by midwives and how many by doctors? *Dr. Fishbein:* Yes, sir, and I can add the relative maternal and infant mortality which goes with that.

Senator Pepper: For example, in Florida I was advised at one time that after the WPA had put on a lot of nurses and after the midwives had been given instructions in their duties that infant mortality in Florida in the next year decreased more than 10 per cent. *Dr. Fishbein:* I would believe that.

Senator Pepper: And that was outside the medical profession. *Dr. Fishbein:* That is true, and that has been done in various other places—in Oklahoma, where four centers were set up for obstetric care, particularly for people in the low income groups, and arrangements were made to send good medical service from these four centers.

Mr. Kaiser: The Doctor has intimated that he would emulate my technic in getting results by threatening publicity. I think that brings home a very important question, because if he really believes in that policy, possibly the medical profession or medical society must likewise believe in it, and that justifies the position that we have been holding. My feeling is that any one who, by threatened publicity, accomplishes anything both should be removed from the service of their country. I likewise feel that way both about myself and the medical association, if that is the policy they follow.

Dr. Fishbein: If we assume that the people of this country are the ones who run the country, the people must know. And the only way to get action is to let the people know. If you have an area in which there is a shortage of doctors and you want doctors, you have a right to let the people know that you are short of doctors. And then if you attempt various strong arm methods to accomplish things that are outside the law, and any newspaper finds that out, they have a right to let the public know.

Senator Pepper: If the American Medical Association finds a deficiency in doctors in the country, are you going to give publicity to that deficiency and use the full glare of the spotlight of publicity to remedy that condition? *Dr. Fishbein:* We are doing that all the time.

Senator Pepper: And if you should find that group insurance of a legitimate character would be a method of using more efficiently the medical talent and personnel of the country, are you going to use that same publicity to achieve that purpose? *Dr. Fishbein:* We not only have used the publicity but we have adopted the policy. There are thirteen state medical societies that have set up such plans, there are over three hundred counties that have set up prepayment plans for supplying medical service. We probably have failed in our publicity in not letting enough people know that the medical profession is itself working out these plans.

Senator Pepper: If you find instances in which members of the Procurement and Assignment staffs have used their public position and power to serve some private end, are you going to give the spotlight of publicity to that? *Dr. Fishbein:* I would be the first to recommend removal. If it came to my personal knowledge that any doctor endeavored to coerce Dr.

Garfield by saying to him "You will either do this or you will be marked essential for military service," I would be the first to recommend that that man be removed from that position.

Senator Pepper: And if you found that there was an appreciable danger that that position was being abused to serve private ends, then you would recommend the reexamination of the policy of using such personnel in a government position? *Dr. Fishbein:* If I found that any system was capable of coercion in what is presumed to be a democracy, I would recommend a change in the system, because I have always been a believer in democracy.

Senator Pepper: Do you regard the American Medical Association as a perfect example of democracy in its functions? *Dr. Fishbein:* I would say that it is organized like the United States government, and it comes as near to functioning like a democracy as the government comes to functioning as a democracy.

Senator Pepper: Thank you very much, Doctor.

Dr. Fishbein: Now, Senator Pepper, does this conclude what I have to say? I have one more statement to make which has to do with a direct charge, using the language of gangsterism, that the American Medical Association had "put the finger" on certain doctors to force them into the Army. That statement was made by a witness before this hearing and widely reported in the press of the United States.

In a statement—whether made here or in the press, I do not know—that witness identified the man on whom the "finger" was put. I would say that, typical of what we endeavor to do to get at the basic facts—that man himself has made a full explanation of what was meant by that statement, and it was entirely unwarranted.

I think it should be in the record that the statement that was made, that the A. M. A. had "put the finger" on some doctor to force him into the Army, was a statement absolutely without any basis in fact, and that if the doctor mentioned was questioned by the committee he would himself say that there had never been any one put any "finger" on him, any one representing the American Medical Association.

Senator Pepper: In the case that you have in mind, was a recommendation at one time made that he be classified as eligible for armed service? *Dr. Fishbein:* As far as I know —and from the man's own statement to me—he had some difficulty. He is a single man, he is without any family, he is not occupying what is generally considered a teaching position, he is doing some research in addition to his practice. He was having great trouble making up his mind whether he should enlist, remain on the job in which he was or look for something else to do.

A man who was associated with him on his hospital staff, and who was formerly—that is nine years ago— a President of the American Medical Association, said to him "If I were you, I would join the Army." That is the extent to which the "finger" was put on the individual.

Senator Pepper: There was never any recommendation or classification by the Procurement and Assignment Service that he was eligible for military duty? *Dr. Fishbein:* Not as far as I know.

Senator Pepper: And there was never any change in that position by a reexamination of the matter? *Dr. Fishbein:* The man is serving in a hospital doing some research. I venture to say that if it was left to the Procurement and Assignment Service wholly they would probably mark him essential. He told me he was having trouble making up his own mind.

Senator Pepper: I am not talking about that. I am asking you whether or not the Procurement and Assignment Service ever classified him as eligible for armed service? *Dr. Fishbein:* I would have to look into that. He stated "no." I asked him that question, if the Procurement and Assignment Service had forced him in, and he said no.

Senator Pepper: I asked you whether he had ever been classified by the Procurement and Assignment Service as eligible? *Dr. Fishbein:* I don't know.

Senator Pepper: So the Army would not have gone out and gotten a club to put him in the Army; I mean the Procurement and Assignment Service, if they were to "put the finger on him," would do nothing more than put him in the category of being eligible to be drawn into service? *Dr. Fishbein:* We must distinguish between the Amercian Medical Association and the Procurement and Assignment Service. The testimony was that the American Medical Association had "put the finger" on him. The American Medical Association has not "put the finger" on him.

Dr. Garfield: Do you think we could get men over 40 to go to Vancouver and take the place of our doctors up there, well trained men? *Dr. Fishbein:* There is a doctor in Seattle who is about 42 years old, and he decided that his primary duty lay with the Army. He conducts one of the largest pediatric services in the United States in Seattle, and takes care of very important families, and his income is up in the five figure brackets. He decided that his primary duty was with the Army. He inserted various advertisements, stating that he wanted other doctors to come and take his place, doctors who were not eligible for military service because of age or physical status, and he got fifteen replies to his letter from doctors who wanted to come out and take that particular position.

Dr. Garfield: We are trying to get them. Were those doctors who wanted to come out there licensed in Washington? *Dr. Fishbein:* The doctors stated they were willing to take an examination.

Senator Pepper: Thank you very much, Doctor.

Afternoon Session

STATEMENT OF DR. E. J. O'BRIEN

Senator Pepper: Will you give your full name to the reporter, and your address? *Dr. O'Brien:* Dr. E. J. O'Brien, Detroit, Michigan.

Senator Pepper: And any representative capacity you have. *Dr. O'Brien:* I am a counselor of the American Thoracic Society and president of the State Medical Commission of Michigan, and I am chief surgeon of about eight of the hospitals in that city and some in Ohio.

Senator Pepper: Doctor, suppose you first make any statement that you have in mind, and then we can interrogate you if it will help you to bring out any of the matters that we are interested in. *Dr. O'Brien:* Senator, I was just asked to come yesterday afternoon, and I just flew down. However, I gathered quite a little bit during the course of the morning, and there are some things that struck me as very pertinent.

I think that the matter of public health as a whole is a great deal bigger than any individual, or any group of individuals, or any society. I believe that public health is something in which we are all vitally interested for self preservation, if for nothing else. I think it was brought out quite clearly this morning that there is some dislocation of proper authority and proper selection of doctors for armed forces and having enough left to take care of our civilian population which, to me, is just as important as the armed forces.

Senator Pepper: Doctor, you do then regard the public health as vitally related to the effective prosecution of the war? *Dr. O'Brien:* Oh, very much.

Senator Pepper: And if the government neglects to concern itself about the public health, can it hope to achieve an efficient use of its manpower resources? *Dr. O'Brien:* I don't think so, Senator. I want to state also I am a member of the American Medical Association, as most doctors are. On the other hand, I do not believe the agencies set up, either under or with the cooperation of the American Medical Society are efficiently working out. We know that lots of units—one was mentioned this morning, the Massachusetts General, and the Wisconsin Unit out at Battle Creek is doing nothing. The Northwestern Unit was there for months and months and months; the Harper Hospital unit of Detroit went out in July and it was in Custer for awhile and it is now in Sparta, Wisconsin, and at Camp McCoy, the Payne unit is scattered. They are sending part of that down to Springfield, Missouri, and the others are waiting to go.

Well, there is a serious shortage of doctors. And those are all our cream. When a unit goes like that, they take away the cream. They are big specialists in everything. It is not just haphazard, but they are the cream. And those men have been there for months, just rotting, really, because nothing is happening.

Take the hospital that I am chief of, the Herman Kieffer Hospital, there was one time there when we were down to two doctors. The Army did not take all of those directly, but indirectly. The young fellows that we naturally have that would come in to take the place of those that are leaving, were in the Army so they were not available. A number of them were taken by the Army, and a number left in private practice.

I am not a believer in regimentation as such, but it seems to me that if you can take one doctor and put him into the Army

and send him wherever you want to, there should be some adjustment made where somebody could be kept where he is better.

Now, I think boards will, to a great extent—I am not talking about Michigan only, because they have been very fair—but they do not know the problems. I called a meeting of the Advisory Council of the Michigan State Health Department and the Sanitarium Commission, and I told them that we were being depleted very rapidly, and I was afraid of a breakdown. Michigan is supposed to have and has the best setup for the management of tuberculosis in this country. I do not think that anybody will question that. Still it looked to me as if it was going to be broken down. We had a committee appointed, of which I was a member, and we went to the Procurement and Assignment and told them that these individuals, heads of various sanitariums, had to be kept there or the whole thing would break down. They agreed.

But there again, I think, is where there should be some central board or group that has teeth in what they do. It is hard to recommend—

Senator Pepper (interposing): Pardon me. For example, the Procurement and Assignment, if they were going to be the agency, would have the authority to say to the Army "Here are so many for you," and to the civilian population "Here are so many for you and for the various areas." *Dr. O'Brien:* That is right. Somebody must have that authority. I don't care who has that, but some one must have it.

I am particularly interested in the lack of what is being done, not only now, but even before the war—in communicable diseases. The South, as you know, is absolutely disconnected in that; there is nothing down there in the way of proper management of tuberculosis, and there are thousands of people throughout the country that are coughing and spitting tubercular bacilli all over the street cars and in your hotels and what not; and what is being done about it?

Certainly the American Medical Association is doing nothing. We in Detroit have done something about it. We got $1,000,000 from the council just to go out and find them and we were just bringing them in, instead of the cases coming into the hospital. Seventy-five or 80 or 90 per cent—far advanced—we got them to 40 per cent of early diseased men that were picked up, until one of our mayers, who is now serving a sentence for graft, cut our budget, because of economy, so he said, and dislocated things a little bit. But this should be a national thing.

And there is another thing. I heard Fishbein—I am not fighting with Fishbein and I am not fighting with American Medical—I want to go back to my original statement that medicine and public health are too big for individuals. And with regard to what I just said about tuberculars, we find them early and insulate them.

Here we have about ten million men anyway who are going to be screened and examined, and many of them are going to be found with tuberculosis and are being found with it, and some of them who do not have active tuberculosis but show healed childhood type that they must have gotten from somebody—everybody gets it from somebody who has it—but here are ten million examinations thrown into our lap, and what is done about it? A great deal could be done in controlling tuberculosis, and that is our home consumption again.

Health is essential to our military effort, and it is essential to civilian effort all the time. We are losing good men through that and we will continue to lose them, but we can get them if we go after them. That is our job, but is there anything that we have done about it? No. There should be some board or group.

Senator Pepper: Is tuberculosis considered to be increasing as an incident of the war, in certain areas? *Dr. O'Brien:* It has not been tabulated as yet, Senator, but it will, unless what I am talking about is done. Take such cities as Detroit with no housing, people sleeping in trailers and crowded in all sorts of bad housing conditions, which everybody is familiar with. And other work and insufficient heating and things of that sort—sure there is going to be a lot of it. But you can counteract all of that, Senator, with proper screening and case finding, with beds enough.

We, in Michigan, have about three beds for every death, and that is about what we should have in the country, at least that much. That would mean that you would have to build about 90,000 more beds.

Well, that is not very much money these days, is it?

And I say it means probably your health, Senator, because you do not know who is coughing in your face. But, if all of those who are coughing tubercular bacilli around are hospitalized and got rid of it, you and your family would not be running the risk, and I would not, and my family would not.

But, it is very essential to have a plan, and I don't care whether it is the American Medical or anybody else—but I would like to see it done. I cannot see myself personally why we should have 1 man to a hundred in an army, perfectly normal and healthy individuals—I am not telling the Army what to do, because I know nothing about it—I was in the last war, but with 1 to a hundred in the Army and 1 to 1,500 or 1 to 2,500 or 4,000 people who have been thrown out of the Army because they are unfit, and all of their families and kids—well, it seems to me it is a little out of proportion. It seems to me we can have some boards with teeth that will correlate all of this.

Senator Pepper: Let me interrupt you to ask you this: According to your best judgment, how many people die every year in the United States from tuberculosis? *Dr. O'Brien:* I think about 60,000 odd.

Senator Pepper: Sixty thousand odd. By adequate medical care and attention, how many of those deaths could be prevented? *Dr. O'Brien:* Well, they can all be prevented. There is absolutely no excuse—I don't want to be too critical—one statement was made this morning that they stopped dying immediately of a certain thing. Well, but tuberculosis is a communicable disease and therefore a preventable disease. We cannot stop it right away, Senator, but if, for example, everybody in the United States were theoretically examined tomorrow with an x-ray and you had beds enough to put in anybody who had tuberculosis, you would almost stop the spread immediately. Many of them would be sick and die although we can salvage a big percentage of the tuberculars now with modern treatment but in the course of our lifetime, tuberculosis would cease to be a serious matter.

Senator Pepper: How many of the rejects from the Army have been attributed to tuberculosis? *Dr. O'Brien:* I haven't those figures. I did not even know that I was coming, so I am unprepared with any statistics like that.

Senator Pepper: I know that in my state we got a few years ago, under the Public Works Administration program, the first and the only hospital for tubercular treatment of people in the whole state of Florida.

Since that time we have tried desperately to get an extension of the facilities of that institution and we utterly failed, on the statement that we did not have the facilities or the materials for it, and any extension there would have to be postponed until the end of the war. If it is being done in that state, then in no other part of the country is there any provision being made to take care of the discovered tuberculosis patients or victims who come in through the Selective Service System. *Dr. O'Brien:* I might say in that connection, it has been one of my sore spots that there are all of these people suffering from it and nothing being done. We, in Detroit, are alive to it and I tried to get some correlation between the Army's screening and the health department, but so far, we have not been able to get very far with it.

Senator Pepper: Dr. Parran testified here before this committee that at least 25 per cent of the rejects from the military services under the Selective Service System could be rehabilitated with proper attention and care if proper facilities were provided. *Dr. O'Brien:* I would probably add about 50 per cent more to that and make it 75 or 80 per cent or more that could be salvaged, because most of them that are found would not be there if they did not have fairly early lesions. That does not always follow but naturally you would expect most of them to have early disease and we most assuredly can salvage most of those.

Certainly 25 per cent is much too low an estimate. It is, according to our figures in the state of Michigan, where we really try to take care of tuberculosis.

But to take proper care of it, you have to have some teeth in it, and you have to have your beds to take care of them, and money to take care of their families.

Senator Pepper: Can you imagine Dr. Parran stating, or imagine the condition which he was forced to describe when he said that he had recommended two hundred and ninety hospitals to take care of the millions of war workers that were being moved around from place to place? That was some good while ago. The President had approved two hundred and eighteen, but only two have been completed; fifty-one were

under construction; and he spoke rather discouragingly about any substantial improvement in the hospital construction program. *Dr. O'Brien:* Well, it looks to me like any breakdown in the health program for those who are left here to carry on the war and to build the ships and work in the munition plants and build the tanks and airplanes and so forth, if we think they are that important, and I guess they are—then I think the health of their families should be quite important too, and I do not think it is fair to just say "Well, that is the civilian population, and they will take what is left after the Army gets theirs."

I cannot quite visualize that. Dr. Lamb, I believe, this morning carried it to that extreme. If we get up to ten million men—I think he figured there were 20,000 left for 160 million people. That does not make sense to me.

Senator Pepper: One hundred and twenty million people. *Dr. O'Brien:* Yes. There has got to be some more correlation than exists at the present time, in my opinion, and there had to be some overall board that has teeth in their decisions.

Senator Pepper: Doctor, you are a member of the American Medical Association? *Dr. O'Brien:* Yes, sir.

Senator Pepper: You have been engaged in the practice of medicine for how long? *Dr. O'Brien:* I have been engaged in the practice of medicine for thirty-three years.

Senator Pepper: And you are at the present time in a public capacity in the city of Detroit? *Dr. O'Brien:* That's right.

Senator Pepper: Don't you think it is in the public interest that we approach this whole question of the health of the people with as much freshness of point of view as we can and with as little opportunity for prejudice, or personal interest to interfere with an adequate health program, as can possibly de done? *Dr. O'Brien:* Yes, sir. Health is bigger than individuals. That is my main premise—that health is bigger than that. That is all that we have got, and we have got to adjust ourselves to that. Whether you continue it in a democratic way or in a totalitarian way, it does not make any difference, if you can do it.

If, of instance, I, as a member of the American Medical Association, and the rest of my colleagues can do it as a medical association, all right, that is well and good; but I don't care who does it as long as it is done. But, there should not be any drop in that attempt to control disease because of personal prejudice or because of individual preferences or societies or anything else.

The American Medical Society has really got to be in charge in this way—I mean, they are the American Medical Association, and there are not any doctors of much consequence who do not belong to it. So that anybody who would be in control of a thing of that sort would have to be a member of the American Medical Association.

Senator Pepper: Mr. Weber had some questions.

Mr. Weber: This may be off the records, but I am just particularly interested at the moment in obstetricians because of a certain family problem. I am particularly puzzled by the fact that the Army makes no special rule in regard to obstetricians, that is, they take the men just as they take in any other group of doctors or dentists or whatever they are working with. What is your particular viewpoint on that? Do you think that obstetricians should be classified as essential to the maintenance of the civilian population, or should they be taken just as ordinary practitioners? *Dr. O'Brien:* I have not really checked into it, but I heard this morning, and I did not know that there was such a large clinic following the Army around; I did not know that. I am not questioning the statement, but it is just something I had not known. Because of my ignorance, I would have thought that probably they were more essential at home. That goes for a few others, too.

But, I have an incomplete knowledge of that. In the last war, we did not have any.

Mr. Weber: Are you familiar with the Procurement and Assignment Service in the Detroit area? *Dr. O'Brien:* I am familiar with the men in charge, and I made that statement that they were very fair. When I went to them with the problem of the scuttling of our tuberculosis hospitals and told them who I thought was essential, and so forth, they immediately classed them as essential.

But, can I just elaborate on that a little bit?

Mr. Weber: Yes, please do.

Dr. O'Brien: They are classed as essential and put off for six months. But what is going to happen in six months? We don't know. That is what I would like to know; I would like to have some board that controlled that that could tell us. Procurement and Assignment do not know what they are going to be told. Selective Service don't know what they are going to be told themselves, so we don't know where we are going to be.

Right now, those men that we thought were essential are now being held there, but how long they will be there, I don't know. That is an unhealthy thing to do.

Mr. Weber: I wanted to ask if the officials of Procurement and Assignment in the Detroit area are officials of the American Medical Association unit there? *Dr. O'Brien:* I would think so.

Mr. Weber: Do you know of your own personal knowledge? *Dr. O'Brien:* I could not say whether they were officials or not, but they were all members.

Mr. Weber: Your hospital there was cut down from sixteen physicians to two, did you say? *Dr. O'Brien:* We were down to two at one time, that is right.

Mr. Weber: And that was for a hospital of 900 patients? *Dr. O'Brien:* A hospital of about 700.

Mr. Weber: And it now has how many physicians? *Dr. O'Brien:* It had sixteen. I believe at the last count we had five.

Mr. Weber: How did it decrease from sixteen to two? What was the cause? *Dr. O'Brien:* That was a chain of circumstances. The Army took some; some left and went out into private practice— a thing that I do not think should take place in these times. I think, if you are essential and in a hospital of that sort, you should stay there until the service is over. Then the group of men who were supposed to come in—the residents that we draw from, were taken into the Army, so there wasn't anybody to get from that source.

Then there is another thing. I also think that there should be a little more regulation of the state boards of registration.

For instance, we have turned down a number of people lately that were in from Canada—highly qualified men, but we cannot take them. I am not for letting the bars down and taking in all the refugees and so forth, but I think there is a certain group that could be brought in, a lot of men in this country from South America—our good neighbors down there, that could come in and get a license, I would think, for the duration.

I am not for letting all men come in and take the place of the boys of our own country that have gone to war and have the boys come back, and when they come back find that their practice has gone and somebody else has stayed at home and is reaping the gravy.

I am not for that and I don't think that would take place if they were given a license just for the duration.

Senator Pepper: If they were given a conditional license or a terminable license by the local boards? *Dr. O'Brien:* Yes, We cannot just let them come in and grab off the stuff.

Senator Pepper: All of us are sympathetic with that. If it should be necessary for the federal government to step into this field on account of the concern about the national health, and if some local associations or local registration authority would not cooperate, you believe the national need would justify the federal government in using the power necessary to accomplish that end? *Dr. O'Brien:* I certainly do think so. I think that anything that is necessary should be done to the ultimate goal of preserving the public health and the control of it. And if those of us that are going along now cannot do it; let us get somebody that can. Let us not let people die needlessly when they can be salvaged, whether you call it totalitarianism or industrial medicine or group medicine or American Medical Association—I don't care. I want the health taken care of.

Senator Pepper: Doctor, we thank you. There are hundreds of questions we should like to ask you, but we are running against time, and we appreciate very much your coming here. You have been very helpful.

I want to read into the record a dispatch from Dr. Paul de Kruif, dated at Holland, Michigan, November 5, and is as follows:

Dispatches from the Washington Bureau of the Chicago *Sun* and from the United Press allege that in testifying before your committee November 3 I said that (quote) I had been expelled from the American Medical Association for liberal ideas (unquote). As you know I made no such statement. My testimony could not have been so grossly misunderstood and the falsification of my testimony must have arisen from sources attempting assassination of my character. I believe the vast majority of the physicans of America are sound at heart and are working for the help of the country. I have not attacked the American Medical Association as such. I believe that just as American labor is misrepresented by

certain racketeers so also American medicine is misrepresented by a few men who have tried and are trying to block cooperation between the American Medical Association and the federal government in organizing a health program that would strengthen the nation in the present emergency. I believe that the physicians of the country, once they realize this, will take care of the situation and clean their own house. Respectfully request that you read this telegram into the records Friday morning, November 6.

PAUL DE KRUIF.

Senator Pepper: I would also like to read into the record a telegram received from Dr. Olin West, Secretary of the American Medical Association, dated Chicago, November 5, as follows:

In an item in the Chicago *Sun* for November 4 it is stated that Paul de Kruif stated at a meeting of the manpower investigation subcommittee of the Senate Committee on Education and Labor that he had been expelled from the American Medical Association. Please be informed that Paul de Kruif has never been eligible for membership in the American Medical Association for the very simple reason that he does not hold the degree of Doctor of Medicine and in so far as our records indicate has never been licensed to practice medicine. Available information is to the effect that de Kruif holds the degree of Doctor of Philosophy. He has never been enrolled as a member of the American Medical Association nor as an associate fellow. In the item which appeared in the Chicago *Sun* it is stated that de Kruif attacked the American Medical Association for (quote) allegedly carrying on a recruiting campaign to put doctors into the armed services, citing instances in which he claimed the organization had put the finger on doctors of importance in order to force them into the Army (unquote). Any such statement from whatever source it may emanate is without even the slightest foundation in fact. The American Medical Association has nothing whatever to do with the issuance of commissions or with the assignment of medical officers. The Association has earnestly attempted to cooperate to the fullest with all federal agencies concerned with medical and public health aspects of the war program. OLIN WEST, Secretary, American Medical Association.

Senator Pepper: Also I will insert into the record a telegram from Dr. Herman N. Bundesen, president of the Board of Health of the City of Chicago, as follows:

Re your telephone message requesting that I be in Washington on Friday morning, I regret to advise that as chief of emergency service of the Chicago metropolitan area I already had planned an inspection tour of the district on Friday and Saturday which will take me out of Chicago and make it impossible for me to attend your meeting on Friday. I shall, however, hold myself in readiness for future orders. Much favorable constructive publicity is being disseminated over the country as a result of Senator Pepper's activities. Please give him my kind personal regards.

HERMAN N. BUNDESEN, M.D., President Board of Health.

STATEMENT OF DR. MICHAEL M. DAVIS.

Dr. Davis: My name is Michael M. Davis, my address 1790 Broadway, New York City.

Senator Pepper: Will you go right ahead, Doctor, and make any statement you care to make on this question?

Dr. Davis: I should like to make a statement that refers to three points. I should like to say something regarding the Procurement and Assignment Service with reference to the way it has exercised the responsibilities which the order creating it gave to it.

I should like to offer certain suggestions regarding the organization under which it seems to me the situation in the future should be handled; and, thirdly, I should like to say something regarding the manner in which physicians could in the future be assigned after they have been procured, to civilian areas which need them, a matter which this morning was hardly touched upon.

As regards the Procurement and Assignment Service, there are certain points which I feel should be called to the attention of the committee if they are not already in the record.

There has been discussion as to the quotas. That has been referred to a number of times and the fact that certain states have been overdrawn far beyond their quotas, while other few populous states are under their quotas. It may not be clear that the Procurement and Assignment Service, having been given responsibility for considering civilian as well as military and industrial needs, did not give out the quotas to the states until long after Pearl Harbor, until approximately the late spring—the late May or June—gave out to the individual states the quotas by which they were supposed in the future to be guided in the recruitment of physicians or in their advisory relations to Selective Service. The lateness of the date at which the quotas were given out are in themselves an evidence of the slowness with which the Procurement and Assignment Service moved from the stage of being a registration agency to a point at which it became an agency exercising effective influence on the actual task of procurement and assignment. Then it was not until your committee brought out in your record the manner in which the processes of recruitment for the Army had actually proceeded—that is, not until the last few days—that it had become available to the public how unevenly the recruitment practices had been handled. There has been ample opportunity, both through THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and the general press, for both the medical profession and the public to be informed as to how recruitment was proceeding, so that even if the Army is slow to change its procedures, even if there were pressures of public opinion to stop medical recruitment in states which were getting up beyond their quota, perhaps some change would be brought about so that the efforts to recruit physicians for the Army should be concentrated in this limited number of states which had and still have considerable numbers of eligible physicians within their quotas.

Senator Pepper: Are you Dr. Michael M. Davis? *Dr. Davis:* Yes.

Senator Pepper: Are you a physician? *Dr. Davis:* I want to make this clear. Like Dr. de Kruif, I am a doctor of philosophy. I have been in medical work as a hospital administrator and hospital consultant and in the study of medical economic questions for practically all of my working life, but I am not a physician and therefore I am not a member, of course, of the organized medical profession.

Senator Pepper: You are like Dr. Fishbein in that most of your professional life has been spent in administrative matters affecting the public health, rather than in the practice of the profession of a doctor. *Dr. Davis:* Obviously, not being an M.D., I could not practice the profession of a doctor. I have been concerned with administration work in hospitals and related matters, and I have been concerned with studying and writing on the subject in many parts of the country.

Senator Pepper: Did I understand you to say that you did not consider that the country had had this matter of the disparity between the number of physicians that were being retained in the civilian service and those that were being taken into the Army, relatively, until some weeks ago when this committee, first through the testimony of a doctor from Texas and through some other information, made the matter public in its preliminary report? *Dr. Davis:* So far as I have been able to ascertain, there had been no publicity before that time given to the unevenness of the way in which these quotas had been handled.

Senator Pepper: Did you know that today, for example, there was being held in Washington a conference of the various representatives of the various agencies to discuss this very problem that this committee has disclosed to the country, and try to find some way to adjust the problem? *Dr. Davis:* I did not know that.

Senator Pepper: Dr. Lahey, the chairman of the Procurement and Assignment Service, made that announcement to the committee that he was calling such a conference. He also made it clear to the committee that such a conference had no authority, that there was still no over-all, general agency created that had any teeth in it, as Dr. O'Brien said, but it was just going to be consultation, because, as Dr. Lahey put it, there was always a serious shortage of doctors for the civilian population. Is that your opinion, that there is still a serious shortage in the civilian population of doctors? *Dr. Davis:* I am of the opinion that at the present time the number of doctors that has thus far been taken into the Army would not, taking the nation as a whole, constitute a serious shortage if the doctors were more equitably distributed in relation to the need, and if the conditions of practice were such that the fullest opportunity could be taken to use the doctors' time to the maximum.

Senator Pepper: At the present time, with the private compensation system that is in vogue, is it likely that medical services are distributed according to medical need? *Dr. Davis:* I think we have very good evidence to the contrary, because it has been perfectly clear that for many years past—it was suggested this morning—that physicians have intended to go in disproportionate numbers to the cities, that is, to the places in which the relatively large proportion of wealthy and paying patients were found. A very close correlation exists between the average per capita of wealth areas in the country and the distribution of hospitals and physicians. That situation has been going on for a long time and has been relatively, on the whole, increasing rather than decreasing.

Senator Pepper: So that the existence of medical facilities and medical attention are more nearly to be found congruous

to the wealth and ability to pay for those services than with the need for those services? *Dr. Davis:* Yes, sir. And I should like to point out another item which I think has a bearing on the unevenness of the Procurement and Assignment Service, namely, the vague and often confused character of the instructions which it has given out. I am in very close touch with the hospital world professionally. Recently at the annual convention of the American Hospital Association in St. Louis a few weeks ago I had occasion to talk with hospital administrators from many parts of the country, men who have been very much concerned, of course, with the maintenance of their staffs, and I was struck by the great difficulty which they had in agreeing among themselves on the basis on which they were to review their staffs and declare or recommend that so and so or so and so, members of their staff, were essential or not. I turn back to a pronouncement of the Procurement and Assignment Service, which I would like to read two or three sentences from. This comes from the August 1 issue of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, where Dr. Lahey, the chairman, had set down a series of frequently asked questions with the answers as released by the board. There are two questions that were asked relating to essentiality of a physician on the hospital staff:

"On what basis do you call a man essential at a hospital? What yardstick do you use to call men essential to the hospital staff?"

And the answer quoted is: "Each hospital is supposed to make its own list of essential men, which is submitted to the State Chairman of the Procurement and Assignment. If he agrees, they are considered essential. If he does not, the hospital will be required to modify its list."

I submit that the hospital administration does not receive from that answer anything at all as to the standards on which they are to proceed in determining whether or not the individual staff member is essential. And that is an extremely important matter, because such a determination involves the whole future of the staff member for a few years, at least, and it should be determined on what basis his essentiality is to be determined. Clearly there should be some criteria or standards enunciated which should guide individuals in making up their decisions.

This is merely one illustration which I offer of the failure to give clearcut criteria or standards on which individual physicians or hospital administrators or hospital boards should proceed to determine this very vital question.

There is another point that I would like to lay stress on, because it seems to me to be basic. The whole foundation of the organization of the Procurement and Assignment Service has been built up, and the national organization has functioned, on the policy that the primary responsibility rested with the states and localities and with a minimum responsibility on the national group. I could illustrate that in this way. It happened that last July a public forum on the air was held in which the then executive officer, Colonel Seeley of Procurement and Assignment, and myself and one other man took part. At that time Colonel Seeley stated that the matter of meeting the civilian need for physicians in areas was primarily a local and state problem. A month later than that, in an official pronouncement of the Procurement and Assignment Service, published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, the same principle was repeated, that the decision of civilian needs is essentially a state and local problem.

So long as that principle carries through clearly, it is inconceivable that there can be a proper balance between the relative needs of states, so long as the state is the primary unit for decision. That principle of course may be taken along with another point which goes to the root of the whole matter and has a great bearing on the future, namely, so far as we have proceeded in relation to this matter of the judgment of the essentiality of physicians for industrial, military, or civilian service, the responsibility for the administration has rested wholly on a group of physicians. It is perfectly clear, if one considers that in terms of the locality, that if you are considering the question as to whether or not additional physicians are needed in the area, that you place on a group of physicians living and practicing in that area a question in which their personal interests are inevitably involved with their public judgments. And that is a decision which I think it is undesirable to place on any man. I work with physicians, and I have worked with physicians all my life. What I say is no reflection on them. On the contrary, I may say that I have found and it is my opinion that physicians are especially idealistic and public spirited, with a high degree of public consciousness of duty to the community, but I believe that it cannot be gainsaid that no men can be trusted with judgments affecting the lives of others when their personal interests and their public judgments are both involved in the same case.

Senator Pepper: Would that lead you to question the wisdom of the Procurement and Assignment Service in essentially having adopted the officials and the lists of the American Medical Association in the determination of who are eligible and who are ineligible for the armed services? *Dr. Davis:* I think that the very close working relations which undoubtedly exist between the Procurement and Assignment Service and the American Medical Association state and local branches are inevitable so long as the body set up by the federal government to deal with this medical manpower question is wholly a professional group.

The point to which I am alluding is that I believe that the basic decision as to local and state needs should be made by a group in which certain public interests are represented along with certain professional groups. And I believe that the overall situation nationally should be in a similar mixed body.

Senator Pepper: Is there not in your opinion a difference between taking the technical advice and counsel and deriving technical knowledge from technical men, and in putting the technical men in the places to make the final decision? For example, a judge on the bench will hear the testimony of medical men about a medical question, but after all he sits representing the public and determines the decision according to the weight of the evidence and its competency and relevancy as he sees it. While no one might question the absolute necessity of the Manpower Commission and the Selective Service in seeking the advice and counsel of the medical men, yet when it comes to the decision, if it were left to the medical men solely, that would make them substantially the administrative agency itself, would it not? *Dr. Davis:* Yes, sir, and I believe that, until basic defect in the present whole setup is corrected, we cannot have a satisfactory policy. If I may enlarge on that point a little bit?

Senator Pepper: Go right ahead. *Dr. Davis:* It seems to me that if there is to be set up, as your committee and others have suggested, or that another congressional committee has suggested, a general manpower body, as was suggested this morning by Mr. Kaiser, in which various interests should be represented as an authoritative body, that the same general principle needs to be applied in controlling the subsidiary but important question of medical manpower, that is, that a body in which the groups of the public directly affected—labor, industrial management as applied to industrial areas, farm groups as applied to rural areas, the general public, and of course the medical profession and the allied profession of dentistry, and others if you like—would be brought in to decide and outline the basic policies for the nation, and only such a body which incorporates in its decisions both the public points of view along with the professional and technical knowledge, can be a proper body to leave these matters to.

I would like to go further and apply that to the local level. A situation such as Mr. Kaiser described this morning indicates to my mind that the decision as to the local needs in his area for more physicians—for the introduction of more physicians—their employment in one fashion or another, and that in that decision the workers in Mr. Kaiser's factories, and Mr. Kaiser as the employer, they both have a vital stake, as well as the physicians of the locality have a vital stake in it, and the basic decision on that, or the recommendation as to whether more physicians are needed, should be made by a group in which all of those interests are represented locally, as well as for the consideration of the technical information that the physicians alone have to offer.

I would like to give an illustration of how the present policy has worked in a community very near to us here—that is, in Baltimore. You have already heard and it is common knowledge, of the serious conditions in the suburbs of Baltimore near the Glenn Martin bomber plant. In that Middle River section, it has been made well known through publications in the Baltimore papers and otherwise that there are over 50,000 persons now in an area that had a small population a while ago, and that there have been and still are only six resident doctors in the area. To get a doctor out from Baltimore is difficult and expensive on account of the mileage charges, and so forth. It may not be so fully known, although it is also a matter of public knowledge, that, in order to begin to meet that situation, a plan was worked out by the United States Public Health

Service and the United States Children's Bureau, acting under the authority which they have under the two titles of the Social Security Act, by which they can spend certain public funds appropriated to them by Congress at the request of the state health department. A plan was worked out to meet the very critical situation in obstetrical care in that area by which an additional physician, a woman physician, was to be there, a woman so that she would not be involved in the draft, and she was to be introduced on full time salary, and an arrangement was worked out with Johns Hopkins Hospital so that she would be given some special supplementary training for a period to make her ready. The plan was to place her in this area with a small trailer hospital, and it was to go into effect about the first of October. The plan in the initial stages was approved by the six local physicians, and I presume the county board of the county, because it was a county matter, not being within the city limits of the city of Baltimore.

Unfortunately, late in the game and after all of the arrangements had been made and after the woman physician had been engaged and was already about completing her training at Johns Hopkins, a change took place in the minds of the six local physicians and they changed their views and opposed the plan, so that the steps by which the United States Public Health Service and the Children's Bureau could supply their funds were broken down, because the consent of the county health officer and of the state health department necessary for the expenditure of those funds was no longer available, because the plan was no longer approved by the local medical group; in other words, the needs of a number of women in this area with a population enormously grown from the original number and only with the same number of doctors that were there before, and yet the United States government could not proceed to carry out an already well made out plan because of the objection of the six local doctors in that area.

Senator Pepper: The six private doctors, then, by objecting to that plan, caused the county health unit and the state health unit to disapprove of it, and that in turn caused the United States Public Health Service to be unable to go ahead effectively with the plan? *Dr. Davis:* Yes, sir.

Senator Pepper: So that there was a case where a private group, because they privately disapproved of this health plan, throttled the public agencies which were trying to put public health facilities at the disposal of people who otherwise would not have them? *Dr. Davis:* Yes. The present system, I believe, is basically wrong at the initial point where action should take place, namely, the decision as to the local needs being dependent on a group which inevitably has a double interest in view. In other words, it seems to me that any basic corrective requires the introduction of a joint body representing the public interests concerned, as well as the private professional group at both the local and national levels, in determining this matter.

If we come to the question, not of the procurement of doctors, but of the assignment of doctors to meet civilian needs, I should like to say something on that subject. We had this morning an example of one type of procedure which would be appropriate to an industrial area with greatly increased population, in which a single large industry was dominant. There it is possible to do what Mr. Kaiser is attempting to do, namely, employ physicians on salary, utilizing existing hospitals, or building new ones, and set up a clinic with a staff of salaried doctors to carry on the care of illness caused by industry or caused by general reasons, for the workers and perhaps for their families. That scheme is one pattern under which doctors can be assigned, and it is nongovernmental in pattern in the local situation, but it will require some authoritative governmental agencies or agency in there to engineer that pattern, because industry, by and large, and the organized workers in industry —and I mean large war industries in isolated areas—will have to have some help in most cases in order to get the doctors and get their plants organized as quickly as possible.

Senator Pepper: Dr. Davis, I had a questionnaire which came to me recently, and I did not have a chance to answer it until yesterday. It evidently was a uniform questionnaire that is being sent out from the medical officers or certain doctors in my state. Down at the bottom it said something about "The candidate for Congress will sign here." Evidently it was a questionnaire that was intended to be submitted to all candidates for Congress, and perhaps it was also intended to be addressed to all members of Congress sitting at the present time also. This questionnaire had a number of questions proposed, and one of them was "Do you favor the medical profession being subject to the antitrust laws, as has been held by the courts?" And "Do you favor restricting the choice of the patient in the selection of the doctor?" and the like. One of the questions asked was "Are you willing to leave to the doctors of the country the provisions of facilities and plans and arrangements to meet public health needs?" In all of those other cases I was able to answer the questions in a way that apparently would be agreeable to the questioner, except in that respect, and I was forced to say "No, not to the exclusion of the public agencies, the state and local government and the national government, and other agencies that have a direct relationship to the problem." Now, do you believe that we can afford to leave to the lawyers entirely the question of what kind of laws we are going to have, and to the doctors entirely the question of what kind of medical and health facilities we are going to have, without the people having anything to say at all about it? *Dr. Davis:* I believe in something that I think Abraham Lincoln said, that no man is wise enough to tell another man what he must or must not do, without that man's consent, and I don't think physicians are wise enough to decide public questions without public participation.

Senator Pepper: It is a matter about which all of us should collaborate, is it not? *Dr. Davis:* Yes, sir.

Senator Pepper: The national government, the state government, the local health agencies, the doctors and all the other agencies that are concerned about the vital question of public health. *Dr. Davis:* I should like to add something on the point that I was making a moment ago. It was mentioned this morning that the American Medical Association is in favor of and has approved the principle of prepayment plans. That is true. I have read about their approval, but that approval is conditioned in certain ways that are rather important. It is conditioned by the requirement that the plans must comply with certain broad principles which have been approved by the House of Delegates of the American Medical Association for prepayment plans, principles that were laid down some time ago, and actually since those principles were laid down the various local and state medical societies and the American Medical Association at least indirectly have been involved in action against a number of prepayment plans, so that unless the prepayment plans comply with certain requirements they actually are not approved by the American Medical Association, and the particular type of prepayment plan that, so far as I know, has not been approved in any instance by a state or local medical society is the type of prepayment plan which encourages a group of salaried physicians working as an organization, or staff of a hospital, or a clinic, and working and carrying on on the basis of group practice, with the support and voluntary contributions of the workers and their families, if it be located in a strictly industrial area and organized to serve them. In other words, there are only certain types of prepayment plans that are acceptable to the American Medical Association, and attempts have been made in many places, of which the situation in Washington in the District of Columbia was only one example, to prevent such plans. There is no indication that the American Medical Association or its state and local societies will accept the type of plan which, for instance, Mr. Kaiser has suggested, because there is good evidence, in my opinion, to show that in a time when the utmost possible must be done to make the maximum use of the doctors that we have got, and where you have a concentrated population you can get the most out of your doctors if you organize their time and not leave them to compete with another on the usual private practice basis.

I am not in favor of the federal system of medicine, but I think that during a war period, and with a limited number of physicians, I think the federal government is the only body that can exercise the necessary authority and exercise the necessary influence over the state and local bodies of all kinds to make the maximum use of the limited number of doctors that we have, even as compared with peace times, after we have furnished the Army even on a reduced ratio.

Senator Pepper: In other words, during this emergency, such a so-called group health plan, where its membership is based on voluntary cooperation, may be the only way that we can make the most officient use of the medical services that we have? *Dr. Davis:* Yes, sir. And I also want to add that there are some local circumstances where such plans are not practicable. For example, in the state of California, the California Medical Society is practically the sponsor of the responsible body for the California Physicians Services, which sponsors a prepayment plan, but the prepayment plan is based

on the so-called "free choice" or private practice principle in which those in the area have a free choice. Such a plan is all right in peace times if the rates are low enough. It has not done very well in California so far, but there are circumstances in which such a plan may make out pretty well. There have been examples in peace times of such a plan working out very well in a place like, to mention one, Binghamton, New York, where a person may call on any physician in the community; and there it has worked out pretty well. On the other hand, you have another type of situation—you have rural areas where the number of doctors has been few to start with, and has been greatly cut down and where it is absolutely necessary to introduce a doctor in the community, like in Valparaiso, Florida. That was only accomplished after a council of the state medical society gave its approval, and only then was the state medical officer ready to send his formal statement to the Public Health Service, on the basis of which it was possible for the service to act.

Just a further word regarding the federal agency that must do this job. Assuming that there is some over-all national body which will include both public and professional representatives in determining policy, and assuming that the local need for doctors is also determined, not by a wholly medical group but by a similarly mixed group, I think it would be possible to expect an organization like the United States Public Health Service to be effective as the agent of the United States government for carrying through a program of assigning doctors and of organizing local facilities which will make those doctors' time most effective.

Mr. Weber: It does not have that authority at the present time? *Dr. Davis:* It can only act now on the basis of requests coming from the state. It can only spend money then. I believe that in the period during which we are at war, the President can declare any area an area of urgent need, and in those areas so declared, in health matters the Public Health Service would then have the right to send commissioned health officers into the area, irrespective of state license laws, to carry out any medical services in the area. Obviously, that is a power which would be exercised with caution. In that way they are aiding the local bodies. They could decide with the proper local people what hospitals should be built there, if more are needed, and how the doctors' work should be correlated with the hospitals, and so forth.

If we just send doctors around or assign them, I should like very much to know just how these certain number of doctors which were referred to this morning as having very recently been assigned by the Procurement and Assignment, as to how they have been assigned and to what duties, and how they are supposed to work, because it is absolutely essential, as I brought out before, that their time shall be used to the utmost, and that is a problem of organization and not merely of ticketing certain doctors and saying to them "You go there and start practice." These men are mostly, in the nature of things, going to be men who have already acquired a practice. If they leave that practice, they are leaving everything they worked for, for the duration at least, and they may never be able to come back to it. Obviously, the government, which asks them to leave, directly or indirectly, must give them something, must pay their moving expenses, must give them a guaranty for the duration, unless they make an arrangement with industry, like Mr. Kaiser told us about.

In other words, there is a problem required to meet our civilian needs. It requires organizing ability in which not only the doctors themselves are involved, but hospitals, industries, local groups in rural areas, the unions if it is a large industrial area in which unions are important, as most of them will be now. So that all of these bodies must be drawn in, and we must have a national agency which can furnish some personnel to help the localities to organize.

But, again, all these studies come after the basic decision as to what the needs are and what the general policies are and have been made by a group in which the public as well as the profession is represented from the start of the whole thing.

I have great confidence and I would like to be on record as making clear that I have great confidence in the United States Public Health Service. I believe that the United States Public Health Service, like every other group composed mainly, as it is, of medical officers, cannot easily work under the severe pressures to which it is subjected from the organized profession, local, state and national, unless it is protected against those pressures by being responsible to a mixed policy determination body in which public lay groups as well as medical men are jointly members. Thus protected, I believe that the United States Public Health Service would be an effective body. Of course, I also believe that the organized medical profession has a proper and necessary relation to any such procedure as we are talking about, in an advisory way; but I believe that the experience of many types, and especially experience with the Procurement and Assignment shows that in making the basic decisions and as an administrative body carrying out decisions we cannot place reliance upon a wholly or primarily professional group.

I would like to say another word or two on the further question of assignment. There is a question of finances that is involved that may be rather important. How many million dollars is there going to be necessary for the federal government to spend to place into civilian areas doctors that will meet their needs, assuming that there is some kind of an overall body that will determine the policy? I doubt if it is possible to make an estimate of that now that can be reliable, because only after that has been canvassed in terms of the situation in each area, can that be determined.

We will have at least the following types of situations; first, areas to which the federal government must send a commissioned federal officer on salary and in uniform, who will carry on the care, preventive and curative, of the population in that area, either alone, if he is the only man there, or in cooperation with the other doctors that may be there. That will be wholly a federal charge.

Mr. Weber: And you think the number of such areas would be small? *Dr. Davis:* Relatively so in comparison with the other types. There will be areas in which you have a large dominating industry, such as Kaiser, for instance, in which the management of the industry and the workers would be able and desirous of meeting all of the operating expenses, and in which, if hospital facilities were necessary, federal aid as is now possible technically under the Lanham Act would be available for building of the hospital if the material situation can be straightened out, but in which primarily the responsibilty of the federal government would be to aid in the determination of the amount of need and the number of doctors, and in helping in an advisory way the unions and the management in organizing their scheme if they needed such aid and in furnishing them with lists of doctors, if they were necessary, from a national pool, drawn primarily from the states that now have more doctors than their quotas provide for.

Another type is a mixed type in which a community needing more doctors but with diffused industries and with no outstanding or dominating ones and where it is possible that a number of doctors will go in there on a private basis to supplement the existing doctors, but in which the federal government will have to meet certain expenses of moving the doctors and their families and of providing an initial guaranty and some funds so that they can set up their offices, and so forth, and possibly providing them with a certain guaranteed income while they are making their start in the new community.

I think it would be very difficult to judge as to just what the relative proportions of those different demands would be until we have made a statistical analysis of this situation. We have some of those, but, meanwhile, action need not wait until such further academic studies.

Dr. Lamb: I think I would like to follow up this question of the Public Health Service. Is it not your impression that the Public Health Service has been by-passed in recruiting of doctors by the Army and the Navy? *Dr. Davis:* I don't know quite what you mean by "by-passing" the Public Health Service. I think the general attitude of every one has necessarily been that the Army needs come first. Nobody wants to oppose the Army, or no individual wants to be in the position of saying that he doesn't want to go into the national military service.

Dr. Lamb: I am sorry that I did not make the question clear. Why was the Procurement and Assignment set up separate and outside of the United States Public Health Service? Do you feel that the United States Public Health Service was competent to recruit personnel for the Army and the Navy? *Dr. Davis:* I feel that it would have been far better for us nationally, and we should be very much further along today if the Public Health Service had been given the necessary authority, and of course some funds, a year ago—more than a year ago—when we first began to see this situation, and if a body representing both the public and the professions

as its advisory and policy determining group were organized so that the Procurement and Assignment Service would never have been called into existence in its present form, but in which a joint group of public and professionals would have been in a position to control the policy, with the Public Health Service as the administrative agency doing the actual job in the field.

Dr. Lamb: You mean to say that if the United States Public Health Service had been designated originally to carry out the function of obtaining the medical personnel for the Army and the Navy, the public interest, that is, the medical interests of the civilian population, would doubtless have come to the fore much more quickly? *Dr. Davis:* Very much so, provided the Public Health Service, which is itself necessarily much subject to the same pressures from organized medicine that other medical groups are, had been protected against those pressures by the organization of this policy determining body composed of both medical and lay representatives.

Dr. Lamb: In other words, if the job of recruiting had been placed in the hands of the United States Public Health Service, this advisory lay body would have immediately begun to exercise some influence on those policies? *Dr. Davis:* I think so, without question, because they would have been in a position to judge the facts from the point of view of the country as a whole.

Dr. Lamb: Who first proposed the establishment of the Procurement and Assignment Service? *Dr. Davis:* I believe it is on record that the American Medical Association suggested the idea, and that that was taken up finally by the government and put through just a little over a year ago.

Dr. Lamb: Your main point is that medical personnel, being a short item today, and one of which the supply cannot be expended quickly, would face thoroughgoing change in the way in which medical services have been distributed? For example, in South Carolina—South Carolina has been mentioned very frequently here—there we have a state in which we have 1 doctor, let us say, to 6,000 persons. In New York we have 1 to 1,000; there is a possibility that some system of distributing medical personnel for the civilian population has to be worked out, but there is not yet on paper any such method for distributing that personnel. That is what you have addressed to primorily?

Dr. Davis: Primarily, yes. And to point out that the body which must determine that method and those policies must be a group in which the public is represented by various groups as well as the medical profession.

Mr. Weber: What you are saying is that the United States Public Health Service is the most competent to undertake the administration of any change in the distribution of medical personnel or services that may be necessary? *Dr. Davis:* Yes, sir; I believe that is so. I think if you were to set up a new body, you would practically have to duplicate not only the federal organization, but the local organization in the Public Health Service.

Mr. Weber: Do you fear that the same interests that preferred to set up the Procurement and Assignment service separate from the United States Public Health Service will likewise prefer that the United States Public Health Service not be the body to administer a new method of distributing medical personnel and facilities? *Dr. Davis:* No, not necessarily, and I would like to make myself clear on this point.

In the first place, I do not want to have it inferred that I regard the American Medical Association or the Procurement and Assignment Service as actuated by any sinister motives whatsoever. I have known physicians too long and I have known too many men in the American Medical Association Councils who are public spirited men of the highest type of individuals. I see no sinister motive. I see short sightedness and specialized points of view which do not take into account the other interests of the public that should be represented.

As to the public health service, I think that I would not be able to say that you could get any other body any better than the United States Public Health Service. Certainly, we could not set up any other body at short notice that would be nearly as effective.

I believe that the interests that are behind the—I feel that the Procurement and Assignment Service would be delighted to be able to use the United States Public Health Service as its field agent for carrying out the policies which it desires, and that under the great pressure of public opinion, which I am quite sure is being created by the hearings of Senator Pepper's committee which are now being conducted, I am sure that there will be a great activation of methods on the part of the Procurement and Assignment if it continues to exist, but I think that the method which they would most prefer would be that the United States Health Service should be in terms of policy wholly subordinated to the Procurement and Assignment Service, that is that the policy determining body shall be the Procurement and Assignment Service, and the Public Health Service shall be an agent or a tool of that body in carrying out the policies.

I also feel that such a scheme will not be very effective, for the simple reason that I do not believe that a group specialized as that has shown anything like the type of imagination or administrative experience which would be likely to make it effective.

We have wasted a great deal of time already and time is very precious, and action should be taken pretty soon.

Mr. Weber: Coming back to your point—as I understand it, you said that the personnel of the United States Public Health Service and the Advisory lay personnel to that agency make it less amenable to the viewpoint of organized medicine than the Procurement and Assignment, is that right? *Dr. Davis:* Yes, sir.

Mr. Weber: And for that reason, you feel that the United States Public Health Service will not obtain the support from the medical profession as a whole that you would give it, for instance? *Dr. Davis:* I am not sure about that. I am inclined to think that you can count on two things from the medical profession—you can count on their patriotism first. The individual position is relatively idealistic and certainly a patriotic man who, if he knows clearly what the nation wants, will do it. The trouble is he has not been informed about these matters by the chief source of information, THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

If a major national body through this committee works out a policy and makes that clear to the whole people and to the profession, I think you will have a very large amount of cooperation from the profession, which will spring even the American Medical Association largely into line, if you set up an effective machinery in which the medical profession is represented, but not in control.

Mr. Weber: You mean to say that the response of the medical profession and personnel in the country to national policy depends on the type of information that it obtains in regard to what the existing situation happens to be, and you are saying that the organs of the medical profession at this time have not provided a genuine picture of what is happening? *Dr. Davis:* Yes, I think that is true. I think the medical profession shares with every intelligent man, the conviction that they will be guided by the facts, if they have them, but they have not had them.

I would like to put into the record something which will take me about a minute to read. It illustrates that there are local groups of doctors who are very keen on this subject, because they are faced with local needs.

Here is one illustration of what a local area could do with some government aid, as proposed in an editorial in the official journal of the Mississippi State Medical Society. It says:

> The doctor shortage in this country is growing more acute in our state, and in the South each day. . . . Practitioners must use all their energy in treating the sick instead of dividing their time with personal interests. . . . The small town might have a medical center furnished by the town and the county, consisting of a hospital and a medical arts building large enough to accommodate every doctor, dentist, pharmacist and the public health department. The hospital would function best if operated in the interest of all the people alike, with the doctors treated on the same footing. . . . Office building self supported from rent . . . such a setup a real center for treating the sick and educating the public. . . . Center to be supplied with bus service for transporting sick to and from hospitals (*Mississippi Doctor* **20**: 181 [Sept.] 1942).

If you sit down with a group of local doctors who have a local situation where the needs are pretty obvious, once they are drawn to their attention, and with men who are really up against the local facts, you are going to be impressed by the fact that they are going to be like any other group of patriotic men who will work out the problem, just as this editorial says, that here was a group of doctors who was trying to work out how the job could be done, and every doctor did the maximum for the local public which they are there to serve.

I merely bring that out because you would get a very large amount of cooperation from the doctors all over the country as individuals and as groups, once the situation is clear to those doctors and the overall national policy is made a matter of patriotic duty.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war and such other information and announcements as will be useful to the medical profession.

NAVY

TRAINING THE NAVAL PSYCHIATRIST

COMMANDER A. A. MARSTELLER
Medical Corps, United States Navy

LIEUTENANT COMMANDER G. N. RAINES
Medical Corps, United States Navy

LIEUTENANT COMMANDER T. H. CHEAVENS
Medical Corps, United States Naval Reserve

LIEUTENANT E. L. HAMMOND
Medical Corps, United States Navy
and
LIEUTENANT J. J. HEAD
Medical Corps, United States Navy

At the National Naval Medical Center, Bethesda, Md., beginning early in the spring of 1942, certain courses were begun for civilian psychiatrists newly commissioned in the Naval Reserve. It might seem at first thought that such courses would be a waste of time, and the question might be asked "Why not put these psychiatrists to work in the Navy without delay? Why a teaching period for mature specialists in this field?" Experience thus far has shown the value of the present policy and the reasons which make such a training period necessary.

The transition of the civilian from peacetime habits of thought and behavior to a wartime military status is, in general, the greatest problem facing the nation today; greater, in the opinion of many, than the transition of the machines of industry from a peacetime to a wartime basis. The husky farm boy who is a good shot with a squirrel rifle is a good potential fighting man but not an actual useful unit until he has been trained in many new skills and ways of thinking.

The importance of the psychiatrist in the war effort is now well known. What is not so well known is the fact that a psychiatrist who is not familiar with the ruthless necessities of a military organization and its aims and requirements, namely "to keep as many men at as many guns as many days as possible," may create confusion and waste more time than he contributes by his professional skill. In any walk in life the practice of psychiatry is one of some complexity, requiring a knowledge of the mores, laws and habits of the community in which the individual resides and works. The Navy, regarded as a community, is very large, widely scattered, autocratic by military necessity, with a great complexity in its functions of movement, communications and interpersonal relationships. If one is not familiar with these facts, one's effectiveness may be seriously hampered, and inefficiency and waste will occur.

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It is first to demonstrate the foregoing statements and second to remedy these potential difficulties that the course has been instituted. In addition, it should be pointed out that the newer men in the service do not know those with whom they are working, nor are they known to those in authority, and the course of training effectively solves both of these problems. The opportunity to evaluate the doctor himself as to his fitness to perform his duties and to place him in the most advantageous location with regard to his ability and aptitude is an important part of the plan of instruction.

It should be pointed out that the new civilian doctor in the Navy has had no military experience whatever. He must learn the rudiments of military life. Even his clothing offers a considerable problem; to be out of uniform is not only to be subject to ridicule but also to commit an unconsciously embarrassing infraction of military regulation. Learning to wear a uniform is not the least of his troubles. In addition he must quickly conform with many other customs of the military services, the courtesies, the manner of saluting, his obligation in regard to those both under and over him in rank. Much time and confusion is saved by having these matters presented didactically rather than to have him learn the "hard way" and possibly have the loss of self esteem which might result from failure at some post because of his inability to adjust quickly to military procedures. It should be emphasized that a medical officer in the Navy has many duties other than those of a strictly professional character. A reality which must be faced is that these necessities hold good no matter what the physician's standing in a professional way in civil life and no matter what his rank on reporting for active duty in the Navy.

SCOPE OF TRAINING

The course of training at the present time consists of a six to eight weeks period. This is divided between didactic instruction and teaching by actual experience with case assignments. In addition to the lectures covering military necessities, professional problems for their own sake, as well as their relation to naval psychiatric procedure, are being met in this course of instruction. Staff conferences are held frequently and are attended by the regularly assigned neuropsychiatric staff and by the indoctrination class. At these conferences, patients are presented by the individual to whom the case is assigned. The diagnosis, method of management and disposition are determined and thoroughly discussed where the newly commissioned officer can see at first hand the manner of handling the specific problems. The regulations governing the commitment of institutional cases are taught by this method, as well as the important problems relating to the return of persons

not needing institutional care either to civil life or to military duty. In this respect military psychiatry cannot be as idealistic or as free as that in civilian life. This is an important lesson and one not always easily learned by the civilian physician. The unfit must be sought and removed from military service because of the great danger which might result from their retention from idealistic or sentimental reasons. This is one of the unpleasant duties of the military psychiatrist and must be performed in good faith as a part of his obligation to the service. The manner of doing this can be learned only by practical experience and demonstration, not by theoretical discussion. Thus the case in staff conference serves the purpose of showing the manner of keeping records, handling patients and reaching psychiatric decisions under wartime conditions.

In addition, the physicians under instruction are given an opportunity to question the patient as well as to express opinions regarding the case under discussion. It is here that the maturity of judgment, professional skill and military adaptability of the physicians in the group can best be evaluated, leading to careful organization of the future psychiatric services of the Navy. It has also served another interesting and valuable purpose. This might be described as the pooling of varied skills, technics, procedures and attitudes from many clinics, hospitals and schools in various parts of the country toward a common end; i. e., a coordinated, well integrated psychiatric effort throughout the Navy. It is, of course, well known that the practice of psychiatry has many facets, depending to some extent on the phase of psychiatry practiced by the individual doctor. The attitude of teachers, state hospital administrators, analytically trained psychiatrists, those in private practice and others engaged in preventive or educational aspects of this many sided specialty may under such conditions as these become more firmly welded into a well integrated, unified specialty. It is to be hoped that the throwing together of many psychiatrists from many parts of the country, from different clinics and representing many so-called schools of thought will develop a greater tolerance and understanding of psychiatric problems in general, leading to a more effectively coordinated program, which should have a far reaching effect on the war effort as a whole.

Outside the conference, the psychiatrist from civilian life is given an opportunity to study case records and medical surveys and to do neuropsychiatric consultations for other departments in the hospital. It is particularly important that the function of the medical survey boards in the Navy, their manner of being conducted and the final recording of these be learned if a smooth working organization is to be effected. The obligation of the naval psychiatrist to other naval courts and boards and his relation to medicolegal problems are stressed in the present indoctrination course.

The importance of records from a statistical standpoint, provided they are adequate and meet reasonably uniform requirements, cannot be lightly passed over. These features are being met under the present plan; the physician not only learns how he must keep his records but is also given the opportunity to ask "why" and to obtain an answer. Thus physicians who have worked under many different systems of keeping records, no doubt all good, are standardized sufficiently to prevent a chaotic state of affairs which might preclude the possibilities of any advances in our knowledge from statistical records both during and after the war.

ADVANTAGES OF THE PLAN

It is also true that the naval psychiatrist cannot, because of military necessity, limit his practice as sharply as in civil life. Under certain conditions of warfare he might find himself required to assume the role of general practitioner. One of the advantages of the present plan of indoctrination is that each doctor is required to stand watch as Junior Officer of the Day, under instruction in these duties. Cases, other than psychiatric, are seen with proper assistance and supervision, which acts as a short refresher course in general practice. Also on these occasions the physician learns many principles of administration of a naval hospital and learns to meet the many problems which may arise under such conditions. Under the present plan of instruction the civilian psychiatrist not only learns the military organization and administration of a naval hospital but is given an opportunity to perfect his knowledge of the organization of a psychiatric service in a naval hospital. This is particularly important because, if the civilian physicians are assigned to the newly commissioned naval hospitals without any knowledge of the proper responsibilities in organization and administration, great confusion can result. It should also be emphasized that the entire program offers an answer to current criticisms from the medical profession as a whole as well as from the public that psychiatrists have become too highly specialized, too detached and theoretical. The constant association with members of the profession in other specialties should have a salutary effect on the practice of psychiatry and should prove of great value in furthering our knowledge of psychosomatic medicine, and the integration of psychiatric thought with that of more general medical fields. The cloistered life of many psychiatrists, particularly those who have spent many years in institutions devoted almost solely to this specialty, cannot be considered advantageous, nor is it a small problem when the adaptation of the physician to well organized military medical efforts is immediately necessary. The dependence of the psychiatrist in civil practice on his secretary as well as on many technicians in many fields is well known. The reality of military psychiatry brings the physician face to face with the necessity of becoming within himself physician, psychiatrist, at times secretary, as well as his own social service worker under many conditions which he will meet. And he must be prepared to function as effectively as possible with at times a minimum of assistance of any kind from any source.

Regular inspections afford the psychiatrist under instruction an opportunity to learn of his future responsibilities in regard to property and its care, the practical application of the principles of sanitation and the duties which may devolve on him later as an officer responsible for these problems as well as those of personnel.

The indoctrination group further acts as a pool of medical officers, with psychiatric training, from which higher authority in the Navy may draw those who in many parts of the world will be needed for the important and varied duties of a naval psychiatrist.

Another factor of great importance has developed during the course of instruction. From time to time officers from actual combat zones have been present. The participation of these officers in the lectures and discussion serves the very practical purpose of keeping the instruction from becoming too theoretical. It has also been a policy of the Navy to bring into the hospital naval officers of little or no psychiatric training for

postgraduate instruction in psychiatry. These courses are of longer duration and the presence of these officers frequently brings in reports of practical problems in the combat zones.

There is no possibility at the present time of evaluating fully the effects of this educational plan. It may be hoped, however, that some or all of the following effects will be noted: 1. Coordination of the psychiatric effort throughout the Navy by the achievement of uniform attitudes, practices and records. 2. The elimination of technical and clerical errors, thereby minimizing unnecessary correspondence and delay in handling cases which will inevitably result if untrained civilians are "turned loose" without preliminary indoctrination. 3. More efficient application of each physician's own talent and ability from personal, first hand knowledge of these qualities by naval authorities. 4. Improvement in morale and cooperation because of personal friendship developed during the training course not only between civilians but between the newly commissioned reserves and the veteran medical officers of the Navy. 5. Reduced man failure in the combat forces as a result of uniform standards from a military standpoint as to who is unfit for military service from a psychiatric standpoint. 6. Advances of our knowledge of psychiatric wartime problems by the achievement of uniform and valid statistical information. It should be pointed out that each of these psychiatrists who goes out from his instruction course acts as a teacher of proper naval psychiatric procedure and method.

RESULTS TO BE OBTAINED

At the present time the changes in attitude and performance of those under instruction, the high morale and spirit of cooperation between experienced naval officers and newly commissioned reservists give promise that these results will be obtained. Further application and study of the plan will be continued leading to a more complete report of the progress of military psychiatry in the Navy.

CIVILIAN DEFENSE

PROTECTION AND MAINTENANCE OF PUBLIC WATER SUPPLIES

The Medical Division of the United States Office of Civilian Defense, Washington, D. C., has published Sanitary Engineering Bulletin No. 1, entitled "Protection and Maintenance of Public Water Supplies Under War Conditions." The bulletin outlines a cooperative plan of mutual aid for water works, describes the functions of participating officials and suggests specific measures for consideration by local water works to the end that water service may be maintained during an emergency. The plans and suggestions in this bulletin necessarily are general, as no detailed plan could be devised suitable for general adoption without modification, because the functions and laws of state agencies and local communities are not uniform in the various states and because water supply installations vary. The bulletin points out that state or local programs already in operation should not be changed to conform with recommendations in this bulletin unless they will make them more effective. However, it is desirable that a uniform plan of organization be adopted and the suggestions presented in this bulletin may serve as a guide. Among other data is a table from which may be computed the amount of chlorine compounds needed to disinfect water mains temporarily out of service because of disaster. In an appendix are the precautions to be taken with the home water supply. The bulletin also has several pages of references to other literature on the protection and maintenance of public water supplies.

AIR RAID SHELTERS IN BUILDINGS

The Office of Civilian Defense, Washington, D. C., has issued a pamphlet prepared under the direction of the chief of engineers of the Army with suggestions of the National Technological Civil Protection Committee on the subject "Air Raid Shelters in Buildings." It lists the type of weapons used in air attack: incendiary bombs, gas bombs, aerial mines, aerial gunfire and high explosive bombs. The last type of weapon is subdivided into armor piercing, semiarmor piercing, fragmentation and general purpose bombs. The bulletin points out the damage caused and the requirements for protection in buildings against these weapons. It suggests plans for shelter locations and accommodations inside and outside of buildings of different kinds and gives examples of problems with suggestions about how they may be worked out. The bulletin contains numerous diagrams of portions of buildings with suggestions about how to protect the entrances, where to locate escape tunnels, how to strengthen rooms, how and where to construct separate shelters for residences, and where to dig trenches with relation to existing foundations.

THE PLUMBER IN CIVILIAN DEFENSE

In a presentation in the training course for plumbers and engineers given at the School of Public Health, University of Michigan, Ann Arbor, September 22, William H. Cary Jr., sanitary engineer (R) U. S. P. H. S., said, concerning the civilian defense program, that plumbers assigned to water utility repair squads will be called on for a variety of duties in case of enemy action; for example, auxiliary water supplies will need chlorination and we shall have to use the machines now installed in laundries, swimming pools and industries. Water possibly may have to be distributed with trucks and, while street flushers would be suitable for this purpose, they will need piping from which the householder can draw water. It may be necessary to install emergency cross connections to supplement the water supply, and even such auxiliary sources of water supply as swimming pools and industrial supplies may have to be connected to the distributing system if water plants are put out of use, and here the installation of emergency chlorinators becomes important. The selection of auxiliary workers for civilian defense work requires proper identification, a careful personal history and team practice in order to insure smooth performance. Plumbers, Mr. Cary said, have a substantial role in civilian protection.

CIVILIAN DEFENSE INSIGNIA

The director of the Office of Civilian Defense, James M. Landis, has issued Supplementary Order No. 2 (Revised), dated October 23, which cancels Supplementary Order No. 2, dated May 28, with respect to specifications and use of official articles of identification embodying the civilian defense insignia. The order sets forth the articles that may be worn and used by the civilian defense workers, such as arm bands, buttons for uniforms, emergency vehicle pennants, identification cards and signs, flags and banners, air craft, helmet, lapel and automobile emblems, pilot and observer wings, and badges.

EMERGENCY BASE HOSPITAL BEING ORGANIZED AT DURHAM, N. C.

Dr. Fred M. Hanes, Florence McAlister professor of medicine at Duke University College of Medicine, Durham, N. C., has been appointed director of the Durham Emergency Base Hospital Unit for the protection of the civilian population during the war. Dr. Hanes will hold a commission in the U. S. Public Health Service with the rank of senior surgeon. This unit, which will consist of fifteen physicians, all of whom will be commissioned in the Public Health Service, inactive status, subject to call "only in grave emergency," will be one of four organized in North Carolina for this purpose, the others being in Winston-Salem, Charlotte and Raleigh.

MISCELLANEOUS

PUBLIC HEALTH UNDER HITLER

The *Deutsche Zeitung in Kroatian* of July 15 reports that a special department has been opened for prisoners (polizeihaftlinge) in the Foundation Hospital on the Rebro in Zagreb, with 60 beds. This is the first department of this kind in the country and at the same time the most modern in southeasten Europe.

The *Giornale di Medicina Navale e Coloniale* of November-December 1941 contains an article by Dr. Conti, the reich health leader, on the state of health and health services in 1940-1941: There has been no increase in epidemics and no excessive fall of the birth rate. Births in 1940 were 12,000 in excess of 1939, and the figures for 1941, as far as they are known, are hopeful, as they have remained stationary or even show a slight increase. Infant mortality has continuously decreased since 1933, but the severe winter of 1939-1940 was responsible for a slight rise from 6 per cent in 1939 to 6.30 per cent in 1940. An increase in the number of cases of scarlet fever occurred, but there was only a slight increase in fatal cases. The figures for whooping cough, infantile paralysis and meningitis all show a decrease. Other infectious diseases in 1940 were dysentery (no epidemic) 12,790 cases, typhus and paratyphus (no epidemic) 7,339 cases and petechial typhus 8 cases (5 from Poland).

The general mortality rate was 12.5 per cent. This figure, however, cannot be verified, as the exact number of deaths at the front cannot be given.

Conti then writes of the health services for repatriated Germans in Volhynia, Galicia and other provinces. In Lodz, for instance, 150 doctors and obstetricians and a staff of about 300 nurses, 180 assistants, disinfectors and pharmacists are working. About 4,000 people pass daily through the delousing centers in Lodz. Other observation centers are staffed by 600 doctors and 15,000 assistants, and these as well as camps for settlers on their way east have dealt with 40,000 cases of infectious diseases, of which 2,900 were fatal.

The smallness of the increase in tuberculosis from 80,000 to 90,000 cases a year was due to the widespread use of x-ray examinations. The mortality rate increased slightly from 7 to 8 per thousand inhabitants. Dental troubles increased but were counteracted by propaganda for the consumption of wholemeal bread. Nervous diseases increased, particularly stomach troubles. This was due to the abuse of smoking. Rheumatic troubles decreased because people were taught the importance of light, air and sun bathing, and also Sauna baths. A German inventor at Kiel has produced dried milk in lumps weighing 5 "g" each, which will keep fresh for six months, according to *Transocean* of August 22. Milk in this form will take less room than a similar quantity of powdered milk. Patrons of restaurants will be able to get dried milk in cubes in the same form as lump sugar. A lump weighing 5 "g," it is said, will make about one eighth of a quart of milk.

According to *Arbetaren* of August 19, 10,000 Karelians had returned from the Karelian Isthmus and were living in cardboard barracks, six to eight families in a barrack, with only one fireplace. The barracks are leaky in wet weather and are beginning to disintegrate. Some families were living in cellars, threshing sheds and dugouts.

RED CROSS APPEALS FOR NURSE-INSTRUCTORS

A call for members of the Women's Auxiliary who are retired nurses to serve as home nursing instructors was issued at a recent meeting of the National Council on Red Cross Home Nursing. A quota of 1,000,000 persons successfully completing Red Cross home nursing instruction during the year ending June 30, 1943 was set by the council.

"If we are to fill our quota we shall need many new instructors, who must be registered nurses," said Mrs. Ross T. McIntire, wife of the Surgeon General of the United States Navy and a member of the council. "For nurses who retired to marry doctors this is a most suitable way to contribute to the war program. Many, of course, are returning to at least part time active nursing. Those who find home responsibilities too heavy for active nursing should find time to teach a home nursing class. Retired nurses married to Army and Navy doctors are especially needed to teach in areas adjacent to military posts, where the nursing shortage is particularly acute. No women are better aware of the desperate shortage of nurses than doctors' wives, and none see the need of families for some nursing instruction as well as we do."

A typical nursing program carried on by doctors' wives is that of the Washington, D. C., auxiliary. Mrs. A. Magruder MacDonald, president, reports that a majority of its nurse-members have gone back into nursing and are serving in overburdened Washington hospitals. Many others are acting as home nursing instructors. Members of the auxiliary recently formed a Red Cross Home Nursing class and many members are Red Cross nurses aides. A great number have also donated to the Red Cross blood donor service.

COURSE IN OCCUPATIONAL DERMATOSES

A combined lecture and demonstration course in occupational dermatoses will be conducted in Chicago, beginning Jan. 11, 1943, by Dr. Louis Schwartz, chief of the dermatoses Investigations Section of the U. S. Public Health Service. The teaching period will cover two weeks, the first of which will be devoted to lectures and demonstrations and the second to plant visits. Dermatologists, industrial physicians and others interested in the course should communicate with Dr. Edward A. Oliver, 55 East Washington Street, Chicago. No limit will be placed on enrolment for the lectures, but the visits to the plants will be limited to twenty-four enrollees. No fees will be charged.

NURSES AIDES FOR VETERANS HOSPITALS

The administrator of veterans affairs, Brig. Gen. Frank T. Hines, has requested of the American Red Cross that it assign volunteer nurses aides for service in the veterans hospitals. The Red Cross has issued a memorandum for transmission to local chapters authorizing such assignment but pointing out that they must receive their training in civilian hospitals. Requests for this service should be sent to the Red Cross area office, which will attempt to secure volunteers for these assignments. Since under the law of the Veterans Administration nursing service must be paid for, arrangements have been made for nurses aides in veterans hospitals to be paid at the rate of $1 a year and the Veterans Administration is prepared to furnish quarters, meals and laundry, when necessary. These aides must be American citizens.

RESURVEY OF PROFESSIONAL NURSES

To explore the adequacy of the nation's nurse power in the present critical shortage, a resurvey of all professional nurses in the United States is being initiated by the Subcommittee on Nursing, Office of Defense Health and Welfare Services, Paul V. McNutt, Federal Security Administrator, announced on November 10.

In preparation for launching the survey, a meeting of all state agents for the inventory was called for November 13 at the National Institute of Health, Bethesda, Md. These special agents, appointed by the U. S. Public Health Service, also are representatives of the state nursing councils for war service. The survey, to be conducted by the U. S. Public Health Service, will bring up to date the inventory of nurses taken in January 1941 and include about fifty thousand nurses who have graduated from accredited schools of nursing in the last two years. It will be carried on in close cooperation with professional nursing organizations and local Red Cross nursing committees.

Miss Pearl McIver, principal nursing consultant of the U. S. Public Health Service, said that "all registered nurses and all graduate nurses who are inactive and have let their registration lapse are being urged to participate in the survey." Post cards will be mailed by state agents to every nurse in their respective states. Tabulated data furnished by those responding will be compiled by the states and sent to the U. S. Public Health Service in Washington. Individual cards will be retained locally for use of local nursing councils for war service in planning an equitable distribution of nurses to meet military and civilian needs.

ORGANIZATION SECTION

OFFICIAL NOTES

REPORT OF MEETING OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS HELD IN CHICAGO, NOV. 8, 1942

For the duration of the war the Council made certain recommendations with regard to premedical education. These recommendations were published in THE JOURNAL, November 14, page 850.

The University of Georgia School of Medicine was restored to the list of approved medical schools maintained by the Council on Medical Education and Hospitals with the status of being on probation. A statement regarding this action was likewise published in THE JOURNAL, November 14, page 850.

The Council recommended that the "Essentials of an Acceptable School for Clinical Laboratory Technicians," Section III, Faculty, paragraph 2, first sentence, be modified to read "In laboratory practice the enrolment should not exceed two students to each member of the teaching staff."

The Council recommended that the "Essentials of an Acceptable School for Clinical Laboratory Technicians" be modified to read:

V. REQUIREMENTS FOR ADMISSION

13. Candidates for admission should be able to satisfy one of the following requirements.
    (*a*) Graduation from an accredited school of nursing.
    (*b*) Graduation from an accredited school of physical education.
    (*c*) Two years of approved college training including satisfactory courses in biology and other sciences.

Courses in general physics and chemistry, as well as biology, are highly recommended for all who seek to enter training in physical therapy.

The Council at this meeting took action as follows regarding hospitals for intern training and for residencies and fellowships, as well as schools for the training of clinical laboratory and physical therapy technicians:

Hospitals Approved for Internships

Jefferson Hospital, Birmingham, Ala.
Woman's Hospital, Detroit.
McKeesport Hospital, McKeesport, Pa.
St. Margaret Memorial Hospital, Pittsburgh
Hahnemann Hospital, Scranton, Pa.
Wichita Falls Clinic Hospital, Wichita Falls, Texas
Chesapeake and Ohio Hospital, Clifton Forge, Va.

Approved Residencies and Fellowships

Anesthesiology
Indianapolis City Hospital.
New England Hospital for Women and Children, Boston.

Cardiology
Massachusetts General Hospital.

Medicine
St. Joseph's Hospital, Chicago.
White Cross Hospital, Columbus, Ohio.

Mixed
St. Joseph's Hospital, Alton, Ill.
St. Joseph's Hospital, Joliet, Ill.
St. Mary's Hospital, Superior, Wis.

Neurosurgery
Hartford Hospital, Hartford, Conn.
White Cross Hospital, Columbus, Ohio.

Obstetrics and Gynecology
Hospital of the Protestant Episcopal Church, Philadelphia.

Otolaryngology
Syracuse University Medical Center Hospitals, Syracuse, N. Y.

Surgery
University of Nebraska Hospital, Omaha.
Chesapeake and Ohio Hospital, Huntington, W. Va.

Tuberculosis
Pleasant View Sanatorium, East St. Louis, Ill.
Westfield State Sanatorium, Westfield, Mass.

Urology
Grace Hospital, Detroit.

Schools for Clinical Laboratory Technicians Approved

South Highlands Infirmary, Birmingham, Ala.
Denver General Hospital.
Doctor's Hospital, Washington, D. C.
Garfield Memorial Hospital, Washington, D. C.
Sibley Memorial Hospital, Washington, D. C.
James M. Jackson Memorial Hospital, Miami, Fla.
City of Chicago Municipal Tuberculosis Sanitarium.
Mercy Hospital, Cedar Rapids, Iowa.
St. Joseph Mercy Hospital, Sioux City, Iowa.
Providence Hospital, Kansas City, Kan.
Massachusetts Memorial Hospital.
New England Hospital for Women and Children, Boston.
Barnes Hospital, St. Louis.
Charlotte Memorial Hospital, Charlotte, N. C.
North Carolina Baptist Hospital, Winston-Salem, N. C.
Trinity Hospital, Minot, N. D.
Mount Sinai Hospital, Philadelphia.

Schools for Physical Therapy Technicians Approved

Cleveland Clinic Foundation Hospital.
University of California Hospital, San Francisco (approval recommended pending further investigation).

H. G. WEISKOTTEN, Secretary.

RADIO BROADCASTS

"Doctors at War"

American Medical Association dramatized radio broadcasts in cooperation with the National Broadcasting Company will be resumed Saturday, December 26, at 5 p. m. eastern time (4 o'clock central time, 3 o'clock mountain time, 2 o'clock Pacific time). The title of the new series will be "Doctors at War: Book III of Doctors at Work."

Doctors at War will be broadcast with the official approval and cooperation of the Medical Department, United States Army, and the Bureau of Medicine and Surgery, United States Navy. Rear Admiral Ross T. McIntire, Surgeon General of the United States Navy, will appear on the program on a selected date. The broadcasts will be a continuation of the story of Doctors at Work, carrying the fictitious but typical American physicians into the military and naval services of the United States and following the development of the practice of medicine in typical American communities affected by industrial expansion, troop training programs and other wartime influences.

As in past years, the program will be dramatized. Scripts will again be written by William J. Murphy, continuity editor, central division, National Broadcasting Company. Production direction, actors and music will be from the broadcasting company staff. Time is donated and production costs are shared by the National Broadcasting Company.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Pediatricians Elect Officers.—Dr. Amos C. Gipson, Gadsden, was elected president of the Alabama Pediatric Association at its recent annual meeting in Birmingham, succeeding Dr. Clifford L. Lamar, Birmingham; Dr. John Sam Smith, Montgomery, was named vice president, and Dr. Ruth F. R. Berrey, Birmingham, secretary-treasurer.

ARKANSAS

Society News.—The Northeast Arkansas Medical Society was addressed at Jonesboro, October 8, by Drs. Joe Verser, Harrisburg, on "Histamine, In the Specific Type Head Ache and Meniere's Disease"; Isaac G. Duncan, Memphis, Tenn., "Carcinoma of the Prostate," and Joseph F. Shuffield, Little Rock, industrial surgery. Comdr. Homer A. Higgins, Little Rock, state medical officer, Selective Service, also spoke.——The Third Councilor Medical Society was addressed in Forrest City, October 22, by Drs. Lucius C. Sanders, Memphis, Tenn., on "Diagnosis and Treatment of Goiter"; Arthur G. Quinn, Memphis, "Infantile Paralysis"; Gilbert J. Levy, Memphis, "The Kenny Treatment of Infantile Paralysis"; Rufus B. Robins, Camden, and Comdr. Homer A. Higgins, M. C., U. S. Navy Reserve, Little Rock.

GEORGIA

Personal.—Dr. William R. Richards, formerly of Calhoun, has been named health commissioner of Greene County, Greensboro, effective July 1.

New State Appointments.—Dr. Frank M. Ridley Jr., La Grange, was recently appointed a member of the state welfare board to succeed Dr. Wallace K. Smith, Pembroke, who resigned to accept an appointment on the state board of medical examiners. Dr. Smith succeeds Dr. Robert F. Wheat, Bainbridge. Dr. Farish C. Holden, Atlanta, was named a member of the board of medical examiners, succeeding Dr. Harold P. McDonald, Atlanta.

District Meeting.—The semiannual meeting of the Fifth District Medical Society was held at the Academy of Medicine, Atlanta, October 19. Speakers included Major Donald T. Chamberlin, M. C., U. S. Army, "Functional Digestive Diseases as Encountered at the Lawson General Hospital"; Major Joseph J. Wallace, M. C., U. S. Army, "The Arthritic Problem as Viewed at the Lawson General Hospital," and Major Walter M. Bartlett, M. C., U. S. Army, "Three Thousand Hours of Cardiovascular Diseases in a General Hospital."

Dr. Boland Named Professor of Surgery.—Dr. Frank K. Boland, professor of clinical surgery at Emory University School of Medicine, Atlanta, has been appointed Joseph B. Whitehead professor of surgery at Emory. He succeeds Dr. Daniel C. Elkin, who resigned to take up military duties at Walter Reed General Hospital, Washington, D. C. The Whitehead professorship was created in 1939 under a grant from the Joseph B. Whitehead Foundation of Atlanta and carries a special endowment for research and teaching. Dr. Elkin was the first incumbent of the chair.

IDAHO

Public Health Meeting.—A. H. Christiansen, Boise, was elected president of the Idaho Public Health Association at its annual meeting at the University of Idaho, Southern Branch, in Pocatello, October 12-13, and H. C. Clare, M.S.Eng., Boise, is secretary. Among the speakers at the meeting were John R. Nichols, executive dean, on public health in the war effort; Dr. Paul D. Mossman, San Francisco, relationship between Army and Navy health agencies; Dr. Fred T. Foard, San Francisco, emergency medical services, and Dr. Ernest L. Berry, Boise, state director of public health.

ILLINOIS

Society News.—Dr. Raymond W. McNealy, Chicago, discussed diseases of the gallbladder before the Adams County Medical Society at Quincy November 10.——At a meeting of the Will-Grundy Counties Medical Society in Joliet, November 13, Dr. Frederick H. Falls, Chicago, spoke on "Management of Prolonged Labor."——The Macon County Medical Society was addressed in Decatur November 17 by Dr. Edward D. Allen, Chicago, on gynecology.

Chicago

The Bacon Lectures.—Dr. Edward A. Schumann, formerly professor of obstetrics, University of Pennsylvania School of Medicine, Philadelphia, will deliver the Charles Sumner Bacon Lectures for 1942-1943 at the University of Illinois College of Medicine, December 2-3. His subjects will be "The Chamberlains and the Obstetric Forceps" and "Tuberculosis Involving the Female Genitalia."

Cancer Prize Awarded to Dr. Huggins.—Dr. Charles B. Huggins, professor of surgery (urology), University of Chicago School of Medicine, has been awarded the Catharine Berkan Judd Prize of $1,000 for his development of a "method of treatment for prostatic cancer." The Judd Prize was established in 1937 and is administered by the board of directors of the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York. It is awarded annually for outstanding research in the field of cancer.

Dr. Windle Named Director of Neurologic Institute.—William F. Windle, Ph.D., professor of microscopic anatomy at Northwestern University Medical School, has been appointed professor of neurology and director of the Neurologic Institute to succeed the late Dr. Stephen W. Ranson. Horace W. Magoun, Ph.D., associate professor of neuroanatomy, has been named professor of microscopic anatomy to succeed Dr. Windle. Other advancements include Barry J. Anson, Ph.D., to professor of anatomy and Dr. Paul B. Magnuson to professor of bone and joint surgery and chairman of the department.

KANSAS

Personal.—Dr. Walter N. Mundell, Hutchinson, has been named health officer of Reno County.——Dr. Herbert R. Schmidt, Newton, has been appointed coroner of Harvey County to succeed Dr. Charles T. Sills, who recently entered the army. Dr. John E. Attwood, La Crosse, has been appointed coroner of Rush County to succeed Dr. Joseph H. Baker, who also entered the army.——Dr. Harry J. Deeths has been appointed health officer of Atchison.

Outbreak of Bacillary Dysentery.—In September three thousand persons in Newton were afflicted with an intestinal disorder which has since been proved to be bacillary dysentery. It was established that the contamination came from the Mexican village in the city where the water mains were being repaired near the water storage tanks of the city water supply. According to the state medical journal, the outbreak involved 35 per cent of the population of Newton.

The Porter Lectures.—Dr. Irvine McQuarrie, professor of pediatrics, University of Minnesota Medical School, Minneapolis, delivered the twelfth course of lectures under the Porter Lectureship in Medicine at the University of Kansas School of Medicine, Kansas City, November 3-4. The first and third lectures were given at the medical school in Kansas City and the second lecture in the Fraser Theater at Lawrence. Titles of Dr. McQuarrie's lectures were "Experiments of Nature and the Advancement of Medical Knowledge," "Medical Experiences in Besieged China" and "Diseases of Adrenal Glands in Children."

LOUISIANA

Postgraduate Course.—Tulane University of Louisiana School of Medicine, New Orleans, announces a course in traumatic and emergency surgery, November 30-December 1-5, and one on pediatrics, January 25-28. The first course will cover shock, facial injuries, amputations, burns, skin grafting, hand injuries, abdominal, thoracic and vascular injuries, back injuries, fractures, head injuries and the sulfonamides. The course on pediatrics will include a discussion of infant feeding, care of normal newborn and premature infants, blood dyscrasias, infectious diseases, heart disease, intestinal parasites and the child in relation to war.

MARYLAND

Health District Ten Years Old.—The Eastern Health District of Baltimore, which started as an experimental unit, has completed ten years of service. The district was the first organized to provide public health service in Baltimore on a neighborhood basis. Since it was established, the Western Health District and the Southeastern Health District have been created. Dr. Harry S. Mustard, New York, was health officer of the Eastern district for the first five years and since his resignation in 1937 Dr. Charles Howe Eller, Baltimore, has been in charge. The establishment of the unit was a recommendation of Dr. Joseph W. Mountin, Washington, D. C., in his report on the public health survey of Baltimore, and grants from the Rockefeller Foundation assisted in its development.

MASSACHUSETTS

Birth Control Amendment Rejected. — Massachusetts voters rejected a birth control amendment which would have permitted physicians to give contraceptive advice to married persons as a health measure, according to the New York *Times*, November 4.

Emeritus Professors at Harvard Called Back.—The following five emeritus professors at Harvard Medical School, Boston, have been called back into active service: Drs. David Cheever, Henry A. Christian, John Homans, Franklin S. Newell and William C. Quinby, all of Boston. According to the *Harvard Medical Alumni Bulletin*, Dr. Cheever took over the position of surgeon-in-chief at the Peter Bent Brigham Hospital July 15 in the absence of Dr. Elliott C. Cutler, Boston, who has gone into army service.

Physician Receives Publisher's Award.—Dr. Frederick C. Irving, since 1934 William Lambert Richardson professor of obstetrics at Harvard Medical School, Boston, and visiting obstetrician since 1931 at the Boston Lying-In Hospital, has received the fourth award of the Houghton Mifflin Company in its Life-In-America series for his book entitled "Safe Deliverance." The book was published early this month. The Houghton Mifflin awards in this Life-In-America series were first started in 1941. The prize consists of $2,500.

Professor Lamb Awarded Nichols Medal.—The 1943 William H. Nichols Medal of the New York Section of the American Chemical Society was presented to Arthur B. Lamb, Ph.D., Erving professor of chemistry, dean of the Graduate School of Arts and Sciences and director of chemical laboratory, Harvard University, Cambridge. Professor Lamb, for twenty-five years editor of the *Journal of the American Chemical Society*, was cited as an authority on inorganic chemistry, as "an investigator and administrator who has earned a permanent place of honor in the world of science," particularly for research into the properties of aquo and ammonio metal salts.

Industrial Problems in Medical Practice.—A postgraduate institute entitled "Industrial Problems in Medical Practice" was held at the Harvard Club November 7 under the auspices of the state medical society. Among the speakers were:

Dr. Daniel L. Lynch, Boston, The Value of Preemployment Examinations.
Commander A. Warren Stearns, M. C., U. S. Naval Reserve, Boston, The Personality of Industrial Applicants.
Dr. Alan R. Moritz, Boston, Toxic Fumes and Gases in Industry.
Dr. John G. Downing, Boston, Industrial Dermatitis.
Lieut. Comdr. Edwin B. Dunphy, M. C., U. S. Naval Reserve, Boston, Injuries to the Eyes.
Dr. Frank R. Ober, Boston, Examination and Diagnosis of Lame-Back Conditions.
Lieut. Col. Anthony J. Lanza, M. C., U. S. Army, Arlington, Va., Responsibility of Physicians to Industry in Winning the War.
Dr. Carl W. Walter, Boston, Sterilization in Operating Rooms.

A round table discussion on the treatment of burns was held by Drs. Edward D. Churchill, S. Howard Armstrong Jr., Oliver Cope and Charles C. Lund and one on the modern treatment of wounds by Drs. Champ Lyons, Henry C. Marble, Joseph H. Shortell and Gordon M. Morrison, all of Boston.

MINNESOTA

Financial Gifts to University.—Gifts totaling more than $100,000 have been accepted by the board of regents of the University of Minnesota, Minneapolis, and include the following:

$10,700 from the National Foundation for Infantile Paralysis for continued study of the biochemical and physiologic aspects of infantile paralysis.
$10,000 from the National Foundation for Infantile Paralysis to be used for the support of Sister Kenny's work and for the continuation of the instructional program in the Kenny technic.
$10,410 for Minneapolis General Hospital fellowships.
$1,800 for Minneapolis General Hospital pediatrics directorship.
$10,000 from the Home for Children and Aged Women to support the Children's Psychiatric Clinic.
$7,000 from the National Research Council for research on fat metabolism under the direction of Dr. Arild E. Hansen, department of pediatrics.
$5,160 from the U. S. Public Health Service for the support of a training program for nurse anesthetists.
$4,000 from the W. K. Kellogg Foundation to establish a loan fund in the school of nursing.
$3,000 from Sharp & Dohme, Inc., for researches on sulfonamides and in chemistry by Richard T. Arnold and William G. Clark.
$1,200 from the Josiah Macy Jr., Foundation for support of a study on mechanism of the action of sex hormones, being made by Leo T. Samuels, Ph.D., of the department of physiology.
$1,200 and $1,063 from the Rockefeller Foundation for British medical student fund.
$1,000 from the Winthrop Chemical Company to establish research on pyocyanine and other related chemotherapeutic agents, under Dr. Joseph T. King of the department of physiology.

MISSOURI

Medical Plan for Wives and Infants of Service Men.—The division of child hygiene of the state board of health and the U. S. Children's Bureau, Washington, D. C., is initiating a medical and hospital obstetric and pediatric care program in Missouri for the families of the men in the armed forces. The program will subsidize the services of the local medical practitioner on a case basis and in a small way repay him for such service. When hospitalization is necessary for the safety of the mother and newborn child and sick children, such care will be paid for under this program. Funds are available at present to carry out this program to a limited degree, and additional funds are being requested from the Children's Bureau so that a complete medical and hospital obstetric and pediatric care program may be worked out on a statewide basis. The program is being worked out with the cooperation of all physicians in the state, who are registered with the board of health, insuring the patient the choice of physician.

MONTANA

Dr. Cox Goes to Lederle Laboratories.—Herald R. Cox, Sc.D., chief bacteriologist at the Rocky Mountain laboratory, U. S. Public Health Service, Hamilton, and president of the Montana State Public Health Association, has accepted a position as associate director of research for the Lederle Laboratories, Pearl River, N. Y., according to the *Journal-Lancet*. He will have charge of all virus disease work. Dr. Cox joined the staff of the Rocky Mountain laboratory as associate bacteriologist in 1936 and was promoted to chief bacteriologist in 1940. He received his doctor of science degree at Johns Hopkins University, Baltimore, in 1931. From 1932 to 1936 he was assistant in pathology and bacteriology at the Rockefeller Institute for Medical Research. The 1940 Theobald Smith award in medical science, consisting of a bronze medal and $1,000, established by Eli Lilly & Company in 1935, was presented to Dr. Cox for his research in the rickettsial diseases, resulting in the development of a new technic for the preparation of protective vaccines against Rocky Mountain spotted fever and typhus fever.

NEW JERSEY

Hospital News.—The cornerstone of the new St. Michael's Maternity Hospital, Newark, was recently laid, the occasion being the seventy-fifth anniversary of the hospital. The new Maternity Building will accommodate 85 beds and increase the hospital's total to 455.

Society News.—Dr. John A. Kolmer, Philadelphia, discussed "The Sulfonamide Compounds in the Prophylaxis and Treatment of Disease" before the Gloucester County Medical Society in Woodbury recently.——The Essex County Medical Society was addressed, November 12, in Newark by Dr. Philip M. Stimson, New York, on "Early Treatment of Poliomyelitis with a Demonstration of the Kenny Technic."

NEW YORK

Forum on Kenny Treatment.—The Westchester chapter of the National Foundation for Infantile Paralysis will sponsor a meeting, November 24, at the New York Hospital, Westchester Division, White Plains, in cooperation with the Medical Society of the County of Westchester. The session will be devoted principally to a demonstration of the Kenny method for the treatment of infantile paralysis. Dr. Frank M. Wright, New Rochelle, will discuss the subject from the point of view of the physician; Mrs. Eleanor W. Kirban, R.N., Grasslands Hospital, Valhalla, the nursing aspects, and Miss Lucy Lewandowska, R.N., of the county health department, the physiotherapeutic aspects. Dr. Don W. Gudakunst, New York, medical director of the national foundation, will conduct a question period.

New York City

Dr. Opie Returns to Active Status at Cornell.—Dr. Eugene L. Opie, who became emeritus professor of pathology at Cornell University Medical College in 1941, has returned to the active direction of the department during the absence of Dr. William Dock, who has been commissioned a major in the army. Dr. Opie will continue research studies which he has been conducting at the Rockefeller Institute for Medical Research since his retirement from Cornell.

Friday Afternoon Lectures.—The New York Academy of Medicine opened its annual series of Friday Afternoon lectures, November 6, with a talk by Dr. David P. Barr on "Disorders of the Hypophysis from a Clinical Standpoint."

Dr. Harry Gold spoke, November 13, on "Recent Advances in Therapeutics, Including the Newer Drugs of the Sulfonamide Group." Others in the series include Drs. Gerald H. Pratt, November 20, on "The Surgical Treatment of Circulatory Disorders in the Lower Extremities, Including Diabetic Gangrene"; Alan F. Guttmacher, Baltimore, December 4, "The Role of Artificial Insemination in Treating Human Sterility"; Hobart A. Reimann, Philadelphia, December 11, "Virus Pneumonia," and Henry W. Cave, December 18, "Peritonitis: Conservative Treatment."

Dr. Sachs Honored.—Special exercises will be held at Mount Sinai Hospital, November 24, for the presentation to Dr. Bernard Sachs, consulting neurologist at the hospital, of a special issue of the Journal of the Mount Sinai Hospital containing scientific contributions by his friends, associates and colleagues in recognition of the valuable services he has rendered in his "sixty years of participation in the progress of medicine." Among the speakers will be:

Mr. Leo Arnstein, president of the Mount Sinai Hospital.
Dr. Foster Kennedy.
Dr. Malcolm Goodridge, president of the New York Academy of Medicine.
Dr. Adolf Meyer, Baltimore.
Mr. John S. Burke, president of the Altman Foundation.
Mr. Henry Moses, chairman, board of trustees, Montefiore Hospital for Chronic Diseases.
Dr. Tracy J. Putnam.
Dr. Henry A. Riley.
Dr. Ira Cohen.

Report on Oxygen Therapy.—The committee on public health relations of the New York Academy of Medicine has published a report discussing the administration of oxygen therapy. The report cited a recent announcement by William B. Herlands, LL.B., commissioner of investigation, city of New York, that inquiry by his office had disclosed that many New York physicians engaged in the "highly unethical" practice of exacting commissions or "kickbacks" from medical oxygen companies when ordering oxygen for patients. The medical committee took issue with the commissioner's report that, according to oxygen companies, "many physicians" accept commissions or kickbacks from companies which supply oxygen and oxygen therapy equipment. The practice, the committee stated, "is indulged in by a small fringe of the medical profession." It is unfortunate, the report continued, that "newspaper publicity has exploited the unethical conduct of a comparatively small number of physicians to the detriment of the entire medical profession." The names of offending practitioners, the committee stated, should be submitted to the county medical societies and the academy of medicine "for requisite disciplinary action." As a long range measure to protect the public against unnecessarily high charges, the committee agreed with Mr. Herlands that companies should be required to submit a schedule of their rates to the department of health and that the department should publish the rates as a guide to the public. The committee also agreed with Mr. Herlands that all oxygen therapy technicians should be licensed so that only physicians or laymen qualified through training will administer oxygen. The report recommended that the state department of education, rather than the board of health, as suggested by Commissioner Herlands, should be charged with licensing the technicians, whether they are employed by hospitals or by private concerns. "Licensure by this department," the report said, "would be more desirable than that by the city department of health, first, because it would be statewide and, second, because it is scarcely within the province of the department of health to supervise personnel engaged in medical therapy. In order to qualify as a licensed oxygen therapy technician, the candidate should be required to pass a course in the operation of apparatus.

OREGON

State Medical Plans Merge.—On November 1 the Southern Oregon Medical Service Association became a part of the Oregon Physicians' Service, the approved statewide medical service plan sponsored by the Oregon State Medical Society. The Southern Oregon Medical Service Association is operating a prepaid medical and hospital plan for civilian employee groups.

PENNSYLVANIA

Society News.—Dr. Gabriel Tucker, Philadelphia, addressed the Reading Eye, Ear, Nose and Throat Society, October 28, on the diagnosis and treatment of benign and malignant lesions of the larynx. —— The Lackawanna County Medical Society was addressed in Scranton, October 27, by Dr. Michael M. Wolfe, Philadelphia, on "Modern Methods in Facial Plastic Surgery."

Philadelphia

The Pancoast Lecture.—The second Henry K. Pancoast Memorial Lecture was delivered before the Philadelphia Roentgen Ray Society and the Philadelphia College of Physicians on November 5 by Dr. Lawrence Reynolds, Detroit, on "Newer Investigations of Radiation Effects and Their Clinical Application." The lecture was established in honor of Dr. Henry K. Pancoast, who, at the time of his death, May 20, 1939, was professor of radiology at the University of Pennsylvania School of Medicine, Philadelphia, and the Medico-Chirurgical College Graduate School of Medicine, University of Pennsylvania.

GENERAL

Dr. Kleinschmidt Named Director of Medical Service for Red Cross.—Dr. Harry E. Kleinschmidt, formerly director of health education of the National Tuberculosis Association, New York, has been appointed director of medical and health service of the North Atlantic Area of the American Red Cross, with headquarters in New York.

Advisory Committee on Infantile Paralysis.—Because of the war time demands on the time of its medical advisers and others associated with the research and other scientific activities of the National Foundation for Infantile Paralysis, the third annual medical meeting of the foundation will be confined to a one day meeting of the medical advisory committees, to be held December 3 at the New York Academy of Medicine, New York.

Society of Anesthetists.—The American Society of Anesthetists, Inc., will meet in the Squibb Auditorium, New York, December 10, under the presidency of Dr. Wesley Bourne, Westmount, Que., Canada. Included among the speakers will be Drs. Herbert C. Maier, New York, on "Responsibility of the Anesthetist in Reducing Operative Complications in Thoracic Surgery" and Captain Harold F. Bishop, M. C., Army of the United States, Washington, D. C., "Comparative Clinical Results Using Various Drugs and Methods in Spinal Anesthesia."

Industrial Nutrition Advisory Service.—An industrial nutrition advisory service has been organized under the direction of Dr. William H. Sebrell Jr., director of the division of chemotherapy, National Institute of Health, and deputy assistant director, Office of Defense Health and Welfare Services, and Milburn L. Wilson, M.S., assistant director in the Office of Defense Health and Welfare Services. This service will provide practical recommendations to both government owned plants and private industries to meet specific industrial nutrition problems which may affect production by increasing accidents. Dr. Robert S. Goodhart, New York, will direct the nutrition advisory service to industry.

Wool for Use in Kenny Treatment of Infantile Paralysis.—The National Foundation for Infantile Paralysis has 100 per cent wool available for patients getting the Kenny treatment. The wool can be shipped only to hospitals where the need is immediate, that is, where patients in the early stages of infantile paralysis are actually under treatment when the request is made. The material, available through the cooperation of the National Paperboard Association, cannot be shipped in anticipation of cases that may occur in the future. In communities where there are only 1 or 2 cases, it is suggested that sufficient material, such as older blankets, light weight woolen suiting and the like, can be obtained without calling on the foundation's supply. According to an announcement which appeared in the New York *Times*, an average of 5 pounds of woolen material is required for each patient. Those requesting it from the foundation are asked to order only as much as is needed.

Heart Disease Increases.—According to figures from the U. S. Census Bureau published in the newspapers, there were 385,191 deaths from heart disease in 1940, giving a rate of 292.5 per hundred thousand of population and totaling the greatest number of deaths ever recorded from heart disease. The rate per hundred thousand deaths in 1939 was 275.5. The following comparison between 1900 and 1940 shows the sharp decrease in the death rate in the low age brackets:

	1940	1900
Under 1 year	17.5	147.8
1-4 years	3.6	15.0
5-14 years	8.0	23.3
15-24 years	14.0	28.8
25-34 years	29.7	43.4

The increase in fatalities among upper age groups is shown by these figures: 35-44 years, 91.7 in 1940 and 80.8 in 1900; 45-54 years, 279.5 in 1940 and 173.0 in 1900; 55-64 years, 713.5 in 1940 and 414.1 in 1900; 65-74 years, 1,723.5 in 1940 and 957.3 in 1900 and 75 and over, 4,813.2 for 1940 and 1,819.7 for 1900.

Society for the Study of Asthma and Allied Conditions.—The Society for the Study of Asthma and Allied Conditions will hold its fall meeting at the Hotel Plaza, New York, December 5. Among the speakers will be:

Dr. Chevalier L. Jackson, Philadelphia, Differential Diagnosis in Patients with Wheezing.
Dr. John A. Kolmer, Philadelphia, Biotherapy and Chemotherapy of the Respiratory Tract Diseases.
Dr. Matthew Brunner, Brooklyn, N. Y., Canine Sensitivity to Ascaris Antigen.
Dr. Stephen D. Lockey, East Petersburg, Pa., Inhalation of Oxygen and 1:100 Epinephrine Hydrochloride Plus 5 per Cent Glycerin for Relief of Asthmatic Attacks.
Dr. Robert W. Hyde, Fairfax, Vt., Distribution of Allergic States in Selectees.
Dr. Abraham Colmes, Boston, Study in Hay Fever.
Dr. Mary E. H. Loveless, New York, Immunological Studies of Pollinosis: The Accelerated Immune Response in Hay Fever Patients.
Drs. Milton B. Cohen, and Harold J. Friedman, Cleveland, Preliminary Report on the Fractionation of Ragweed Pollen and Immunological Studies with These Fractions.
Dr. Abner M. Fuchs and Margaret B. Strauss, B.A., New York, The Treatment of Hay Fever with Gelatin Pollen Extracts.
Dr. Joseph Harkavy, New York, Vascular Allergy.

The Presidential Address was delivered at the luncheon meeting by Dr. Louis Tuft, Philadelphia, on "Critical Evaluation of Skin Tests in Allergy Diagnosis."

Finney-Howell Research Fellowships.—The Finney-Howell Research Foundation announces that all applications for fellowships for next year must be filed in the office of the foundation, 1211 Cathedral Street, Baltimore, by January 1. Applications received after that date cannot be considered for the 1943 awards, which will be made the first of March. Fellowships carrying an annual stipend of $2,000 are awarded for one year with the possibility of renewal up to three years. When deemed wise by the board of directors, special grants of limited sums may be made to support the work carried on under a fellowship. The foundation was provided for in the will of the late Dr. George Walker, Baltimore, for the support of "research work into the cause or causes and the treatment of cancer." The will directed that the surplus income from the assets of the foundation together with the principal sum should be expended within a period of ten years to support a number of fellowships in cancer research each with an annual stipend of $2,000, "in such universities, laboratories or other institutions, wherever situated, as may be approved by the board of directors." Applications for fellowship must be made on a blank form, which will be furnished by the secretary or any member of the board of directors.

Special Society Elections.—Dr. Ewen M. MacEwen, dean of the State University of Iowa College of Medicine, Iowa City, was chosen president-elect of the Association of American Medical Colleges at its annual session in Louisville, Ky., October 28, and Dr. Waller S. Leathers, Nashville, Tenn., was installed as president. Dr. John Walker Moore, dean of the University of Louisville School of Medicine, was chosen vice president. Dr. Fred C. Zapffe, Chicago, was again reelected secretary, a position he has held for forty years. The next annual meeting will be held in Cleveland, October 25-27.——Present officers of the American Congress of Physical Therapy are Drs. Fred B. Moor, Los Angeles, president; Kristian G. Hansson, New York, president-elect; Miland E. Knapp, Minneapolis, first vice president; Walter S. McClellan, Saratoga Springs, N. Y., second vice president; Herbert Worley Kendell, Chicago, third vice president; Kenneth Phillips, Miami, Fla., fourth vice president; Ora Leonard Huddleston, Denver; fifth vice president; Richard Kovacs, New York, secretary; John S. Coulter, Chicago, treasurer; Walter J. Zeiter, Cleveland, executive director, and Marion G. Smith, B.Sc., Chicago, executive secretary. THE JOURNAL (November 15, page 854) inadvertently carried the old officers in the news columns.

Meeting of Radiologists.—The twenty-eighth annual meeting of the Radiological Society of North America will be held at the Drake Hotel, Chicago, November 30-December 4, under the presidency of Dr. Leon J. Menville, New Orleans. Refresher courses will be conducted throughout the meeting. In addition, the following will speak, among others:

Dr. C. Allen Good Jr., Rochester, Minn., Intussuscepting Lesions of the Small Intestine.
Dr. Charles W. Schwartz, New York, Pitfalls to Be Avoided in the Roentgen Diagnosis of Intracranial Disease.
Lieut. Col. Esmond R. Long, M. C., U. S. Army, Philadelphia, and Captain William H. Stearns, M. C., U. S. Army, New York, Standards for Army Acceptance and Their Application as Illustrated by a Review of Fifty Thousand X-Ray Films of Inducted Men.
Lieut. Comm. Chester H. Warfield, M. C., U. S. Naval Reserve, Wichita, Kan., Types of Pulmonary Tuberculosis Which Demand Disqualification for Active Duty in the Navy.
Dr. Manuel M. García, New Orleans, Tissue Dosage in the Control of Carcinoma of the Cervix.
Dr. Edgar C. Baker, Youngstown, Ohio, Observations on Venography of the Lower Extremities.
Dr. Erich M. Uhlmann, Chicago, Practical Aspects of Tumor Clinic Management.
Drs. Robert E. Fricke, Rochester, and Peter A. N. Pastore, Richmond, Va., Radium Treatment of Hypertrophied Lateral Bands of the Pharynx.
Drs. Rieva Rosh and William P. Quinn, New York, Roentgen Rays in the Treatment of Cervical Lymphadenitis.
H. M. Parker, M.Sc., Seattle, A Device for the Construction of Radium Applicators.
Drs. Fred J. Hodges and Isadore Lampe, Ann Arbor, Mich., The Differential Response of Tissues of Neutron Radiation.
Dr. Benjamin H. Orndoff, Chicago, Roentgen Castration for Malignant and Nonmalignant Diseases.
Dr. Albert Soiland, Los Angeles, Plastic Induration of the Penis.

There will be symposiums on atypical pneumonia, carcinoma of the cervix uteri, tumor clinics in general hospitals, correlation of disability with roentgen findings and injuries to the head, chest and back. The banquet will be addressed on Thursday evening by representatives of the army, navy and public health service.

LATIN AMERICA

Hospital News.—A new emergency hospital will be erected in Natal City under the auspices of the Natal branch of the Brazilian Red Cross and local authorities on a site donated by the Society for the Aid of Hospitals in Natal City. A fund of $11,500 has already been donated by the city.

Pan American Congress of Endocrinology.—The third Pan American Congress of Endocrinology will be held in Buenos Aires, July 1-6, 1943. The headquarters of the congress are at the Instituto de Fisiología de la Facultad de Medicina de Buenos Aires. Dr. Eduardo Braun Menéndez is the general secretary.

Hospital Institute Planned.—Plans for a second Latin American Hospital Institute to be held in Mexico City next May were advanced at the recent American Hospital Association convention, *Modern Hospital* announces. It will be sponsored by the Inter-American Hospital Association with the cooperation, it is expected, of the various American hospital groups, the School of Tropical Medicine of Puerto Rico, the Office of Civilian Defense and the U. S. Children's Bureau.

Prizes for Medical Work.—Dr. Aníbal S. Introzzi, of the Institute de Clinica Quirúrgica of Buenos Aires, was awarded the "Manuel A. Montes de Oca" prize for his book entitled "Bases experimentales del tratamiento quirúrgico de la hipertensión arterial esencial." The Montes de Oca Prize is given by the Faculty of Medicine of the University of Buenos Aires.——Three prizes were awarded by the Comisión Nacional de Cultura of Buenos Aires for medical work carried on in Argentina from 1939 to 1941 to the following doctors: The first prize was given to Dr. José Arce, formerly dean of the Faculty of Medicine of the University of Buenos Aires, for his book "Neumotórax Preoperatorio." Second prize went to Dr. Pablo Luis Mirizzi for his book "Fisiopatología del hepatocolédoco: Colongiografía operatoria." Third prize was awarded to Dr. Delfor de Valle for his book "Patología y cirugía del esfínter de Oddi." Drs. Pedro Mateo Rafael Re, Atilio C. Bottini and León Soldati had honorary certificates for their books.

FOREIGN

Personal.—Dr. Arthur William Mickle Ellis, professor of medicine at the University of London, was appointed regius professor of medicine at the University of Oxford on the retirement of Sir E. Farquhar Buzzard.——According to an announcement in *Nature*, Sir Henry H. Dale, president of the Royal Society, has accepted a directorship of the laboratories of the Royal Institution of Great Britain with the fullerian professorship of chemistry in succession to the late Sir William H. Bragg. It was stated that Sir Henry had expressed the wish that his appointment should be limited to a period of three years.

Government Services

Government Employees Examined for Tuberculosis

The U. S. Public Health Service in cooperation with the District of Columbia Health Department has arranged to conduct chest x-ray examinations of large groups of government employees in Washington. Examinations of the employees of the government printing office were begun October 15. According to *Industrial Hygiene*, arrangements have been made with Dr. Charles P. Waite, Washington, D. C., medical officer in charge of the government printing office, to check the x-ray films of all workers showing signs of chest abnormalities. The examination of the government printing office employees will be followed by similar services in other war agencies.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 17, 1942.

Army Medical Service in the Middle East

After more than two years of war in the Middle East the work of the medical services of the British army can be pronounced good. The forces there operate in countries where malaria, yellow fever, typhoid and schistosomiasis are endemic. Yet the sickness rate has been kept low. The director of medical services has laid down that hospital beds must be provided in the ratio of 40 per thousand troops, but this incidence of casualties has never been attained. Comparison with the 1914-1918 war is most favorable. Then the armies in Egypt and Palestine averaged 170,000 and there were 500,000 admissions to the hospital for sickness. The corresponding figures for Iraq now are 300,000 and 60,000.

Effective prophylaxis and improved hygiene have rendered almost negligible the diseases which in the past proved most crippling to our armies. Typhoid has been mainly restricted to prisoners of war, and last year there were only 183 cases among our troops. Typhus has been confined to the Poles evacuated from Russia and it almost disappeared under disinfestation and regular bathing. Tetanus has been practically nonexistent. Malaria, which was a scourge in the Balkan campaign of the last war, has been kept down by reconnoitering places unsuitable for camp sites and marking them with notice boards. Heat stroke occurs mostly in Iraq and on the Persian Gulf and Red Sea. Not a single casualty from heat stroke or heat exhaustion has been reported from the tanks, in which it might be thought that intolerable temperatures would be reached in the African summer. The explanation seems to be that the aeration arising from the movement of the tank prevents the heat from becoming dangerous.

MOBILE CASUALTY CLEARING STATIONS

The new conditions of mechanical warfare in the vast spaces of the desert have produced revolutionary changes in the organization of the treatment of the wounded. Each unit has its own motor ambulances. Formerly the casualty clearing stations were stationary. Now they have to be mobile and are divided into light and heavy sections. Surgical service is carried as far forward into the fluctuating battle as possible. The units have worked with the battle eddying around them and bullets whistling through the operating tents. Some were captured by the enemy and recaptured in a few days.

These mobile units have been the means of saving hundreds of lives, for in abdominal and chest wounds and many head wounds the man can be saved only by surgical aid within an hour or so. Excellent results are reported from the sulfonamides, whether taken internally or poured into the wound. As an anesthetic in the mobile surgical units pentothal sodium has proved invaluable. Burns and desert sores are treated with methylrosaniline jelly, which is held to surpass all previous remedies for the purpose.

AIR AMBULANCES

The long lines of communication in the desert have caused much suffering to the wounded, who sometimes have had to be jolted for hundreds of miles. Evacuation by air is an obvious alternative. The Australians had a few ambulance planes but the British medical corps had none, so they had to use ordinary transport planes. There was difficulty in removing wounded from the forward areas, as the same landing grounds had to be used as for the fighting planes. If painted white, like hospital ships, they draw attention to the landing ground; if they have no distinguishing marks they are exposed to the risks of fighting aircraft.

DEVELOPMENT OF SPECIALIZATION

A degree of specialization comparable with that of civilian hospitals has been developed. Face wounds are handled at a special maxillofacial center. There are separate centers of physical therapy and massage and for the treatment of psychoneuroses, head injuries and orthopedic and chest cases. There are mobile dental and ophthalmic units, which have done valuable work.

THE POLYGLOT PROBLEM

An extraordinary number of races and languages are represented in the Middle East command. Each has its own standards and requires, as far as possible, to be attended in its own hospital and by a medical staff which speaks its language. There are labor units recruited locally—Palestinians, Syrians, Iraqis and Persians—and others from remote colonies of the empire, such as Mauritius and the Seychelles. There are thousands of African Negroes. Among the troops are Indians (both Moslem and Hindu) and our allies—Poles, French, Greeks, Czechs. All have to be provided for separately. No wonder that there are seventy-five general hospitals. The supply of drugs and equipment has been well maintained.

The Army School of Occupational Therapy

The profound disturbance of our national life produced by the war has brought some benefits, though small compared with the injuries. In the last war the value of occupational therapy was recognized, but afterward it flourished more in the United States and Canada than in this country, and when the British Association of Occupational Therapists was formed in 1936 emphasis was laid on the benefit of the treatment in mental rather than in physical cases. This war has again drawn attention to its value. There is a flourishing army school of occupational therapy which has recently taken in a second batch of pupils, having sent its first batch, mainly masseurs enlisted in the army medical corps, to treat the sick and wounded at home and oversea. This second group consists of twenty-six girls, who are skilled masseuses but who are learning how to blend their professional skill with the teaching of useful crafts and occupations for the benefit of temporarily disabled soldiers.

At present all the patients at the school are from units serving at home. Crafts are taught to engender the creative spirit while remedying physical disability. Fretwork is done on a bicycle driven machine which helps an injured knee; shaping and polishing buckles, on a treadle sandpapering machine for injured ankles. Games, such as table tennis and darts, are played for leg and arm exercise, and drafts are played on the floor with the feet for reeducation after leg injuries. Men are encouraged to use their initiative in the handicrafts, and some remarkably fine work has been done.

Shortage of Practicing Midwives

There is a shortage of practicing midwives, which is due not to any diminution of women seeking training as midwives or of those already qualified but to the fact that only a proportion of qualified midwives engage in practice. The remainder engage in other nursing. They have qualified as midwives because this is considered a recommendation by the public bodies who make nursing appointments. The roll of midwives for England and Wales contains sixty-five thousand names, which is more than sufficient; and yet there is a shortage of midwives in practice.

BRAZIL

(From Our Regular Correspondent)

Sept. 22, 1942.

The Eleventh Pan American Sanitary Conference

The eleventh Pan American Sanitary Conference was held in Rio de Janeiro, September 7-18, under the chairmanship of Dr. J. de Barros Barreto, director of the National Department of Health of Brazil. The program included the subjects continental defense and public health; survey on chest conditions: tuberculosis and pneumonoconioses; influenza; undulant fever; typhus fever; American trypanosomiasis and other parasitic diseases; diarrheas and salmonelloses; degenerative diseases, including cancer and those of the cardiovascular system; sanitary engineering; malaria; nutrition; fundamental rules of health: project of a standard sanitary code for the Americas. Almost all the American republics were represented at the conference by their most prominent health officers. The delegation of the United States consisted of Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, and Dr. G. L. Dunnahoo of the same service; Dr. W. H. Sebrell of the National Institute of Health; Dr. George C. Dunham, U. S. Army; Dr. Charles S. Stephenson, U. S. Navy; Dr. Forest Linder of the Bureau of the Census; Dr. Abel Wolman of the Johns Hopkins University School of Medicine; Dr. Fred L. Soper of the International Health Board of the Rockefeller Foundation; Drs. Hugh S. Cumming, John D. Long and Aristides A. Moll of the Pan American Sanitary Bureau. The delegation of Brazil included Drs. J. de Barros Barreto, Almir Castro, Mario Pinotti, Humberto Pascale, Alberto Amarante, Jansen de Mello and Carlos Chagas Jr., all of the National Department of Health. The other delegates were Drs. Rodolfo Vaccareza, Jorge Claypaul and Francisco Martínez of Argentina, Drs. Abelardo Benavente and Alberto Ibáñez of Bolivia, Drs. Julio Caballero, Eugenio Suárez, Benjamin Viel, Mario Prado, Hernando Urzua, Henrique Laval, Victor Grossi de la Guardia and J. Binimells Roa of Chile, Dr. Augusto Fernández of Colombia, Dr. Solon Núñez of Costa Rica, Dr. Manuel Robiou of the Dominican Republic, Drs. L. Isquieta Pérez, Lewis W. Hackett and Attilio Macchiavello of Ecuador, Drs. Manoel Arroyo and Carlos Vassaux of Guatemala, Dr. Jules Dhebaud of Haiti, Dr. Pedro Ordóñez Díaz of Honduras, Drs. Martínez Baez and Alberto León of Mexico, Dr. Honorio Arguellot of Nicaragua, Drs. Guilherme G. Paredes and Carlos Guardia of Panama, Drs. Ramón Prieto, Miguel Oliveira e Silva, Leandro Pereira, Raul Peña, Jorge Roig, Manuel Ochoa and C. M. Ramellia of Paraguay, Drs. H. Paz Soldán, Cesar Suleta, Carlos La Puente, Hugo Pace and Hugo Pesce of Peru, Drs. F. S. Osegueda and Victor Sutter of Salvador, Drs. Henrique Clavaux and Estenio Ormaeche of Uruguay, and Drs. Rafael Iribarren and Arnoldo Gabaldón of Venezuela. Canada was represented by her minister to Rio de Janeiro, Mr. Jean Désy, and the International Bureau of Labor of the League of Nations by Dr. R. Paula Lopes, a Brazilian specialist who came from Canada for the conference.

The most important subject of the program was continental defense and public health, which had been scheduled to be reported by a representative of Cuba, who could not be present or send the report. A committee was appointed by the conference to study this important subject, and a report was read by Dr. Parran, who was the head of the committee. In the report Dr. Parran said that in the present war public health takes on a new urgency, and, instead of caring primarily for the health of the individual, we must now attain it for the nation's security. He transmitted to the representatives of the other American nations the interest and the willingness of the United States government to support any reasonable proposal designed to facilitate the integration of continental activities within the limits imposed by military exigencies. Dr. Parran's report attempted to summarize into a few items the more important impacts of war on civilian health problems. To begin with there are the great movements of population that occur in wartime, the shifts in industry, the construction of cantonments and munition plants, and new mining activities, as well as the threat of enemy action, which may cause wholesale evacuation, creating urgent problems of sanitation, malaria control and increase in venereal disease. Shortage of health and medical supplies develop because overseas sources are disrupted, and basic materials are needed for military purposes. Industrial health protection becomes more complicated by the sheer increase in the number of industrial employees, by the longer hours of work, by the increase in accidents and by the rise in occupational diseases. Scarcity of foods is traditionally a part of war, among other reasons because of transportation difficulties. The health authorities must guide the rationing systems to insure minimum nutrition standards. Quarantine problems increase, epidemic intelligence breaks down and sanitary safeguards are weakened by military exigencies. The great speed of planes threatens greatly to spread exotic diseases and their insect vectors. In summary, said Dr. Parran, "This war will bring new and difficult tasks to the health forces of each nation. There will be no more health business as usual until the war is won. In this total war, total strength and fitness and health are essential to total victory.

The conference approved the resolution here summarized: Whereas the further extension of the hostilities throughout the world has demonstrated the importance of public health problems; whereas the threat of the extension of the hostilities to the western hemisphere requires the intensification of the preparation for the defense in the field of public health; whereas the equality of sacrifices for the common defense of the western hemisphere in the field of public health is a recognized principle, the eleventh Pan American Sanitary Conference resolves to recommend the governments of the American republics (1) to adopt measures to conserve and improve the medical and other supplies necessary to the preservation of the public health and the continental security and to promote the interchange of these supplies with the aim of satisfying the continental necessities in the matter of health; (2) to make, in each nation, a survey of the geographic distribution of the transmissible diseases of importance in wartime, in accordance with a plan suggested by the Pan American Sanitary Bureau; (3) to collect, without delay, epidemiologic and health data, to be sent to the bureau in order that it may be able to distribute all these informations to the American republics; (4) to make an inventory of the available stock of the supplies essential to the maintenance of health in order to secure the possible and convenient utilization of the surpluses for the cause of continental defense; (5) to make a survey of the most important medical and sanitary necessities in order to enable the several republics to help one another; (6) to prepare a confidential report on the results of the aforesaid surveys which, within the limits of military exigencies, shall be submitted to the appreciation of the Pan American Sanitary Bureau and the interested nations; (7) to utilize fully the cooperation of the Pan American Bureau in all the activities related to the problems of health and sanitary defense and in the execution of the surveys mentioned; (8) to request, under the auspices of the Pan American Bureau, the help of the neighbor nations in case of epidemics threatening the health of the populations of the other republics and the continental security, and (9) to adopt the most drastic measures to control the danger of the spread of transmissible diseases, through the civil and military air transportation of patients, germ carriers and animal vectors, as this possibility is now greatly increased as the result of the extension of speedy air transportation via unforeseen routes. In this case it is suggested that the help of the other nations be requested, and the Pan American Sanitary Bureau will function as a clearing house for information and consultation.

Deaths

Walter Ralph Steiner ✦ a specialist in internal medicine, long a leader of medicine in Connecticut, died on November 4 in the Hartford Hospital, aged 71, of cerebral thrombosis. Dr. Steiner was born in Frederick, Md. He received his master of arts degree at Yale University in 1895, then graduated at Johns Hopkins University School of Medicine, Baltimore, in 1898, serving as house medical officer at Johns Hopkins Hospital from 1898 to 1899. In 1900 he began the practice of medicine in Hartford, serving on the staff of the Hartford Hospital as pathologist and bacteriologist from 1901 to 1912, assistant visiting physician from 1905 to 1907, visiting physician from 1908 to 1937 and consulting pathologist and bacteriologist from 1912. He had been consulting physician since 1934 and chairman of the medical and surgical staff from 1925 to 1933. He had also been consulting physician to the Hartford Orphan Asylum, Bristol, New Britain General, Meriden, Middlesex (Middleton) and the Charlotte Hungerford hospitals, Torrington, and honorary physician to the Manchester Memorial Hospital.

In 1937 the Hartford Medical Society, which he served as librarian from 1903 to 1941 and president in 1929, named its library the Walter R. Steiner Medical Library in his honor and in 1938 held special ceremonies to unveil his portrait, which had been presented to the society.

WALTER R. STEINER, M.D., 1870-1942

Dr. Steiner had been secretary of the Connecticut State Medical Society from 1905 to 1912, chairman of its council from 1929 to 1933 and president from 1934 to 1935. He was president of the American Clinical and Climatological Association from 1934 to 1935, of the Medical Library Association from 1931 to 1933 and of the American Association of the History of Medicine from 1937 to 1939, member of the American Association of Pathologists and Bacteriologists and the Association of American Physicians, fellow of the American College of Physicians and from 1911 to 1932 secretary of the Congress of American Physicians and Surgeons. Except for a few sessions, Dr. Steiner had been a member of the House of Delegates of the American Medical Association from 1919 to 1940. In 1931 he was given a degree of doctor of letters of humanity by Trinity College. Other groups in which he held membership included the New York Academy of Medicine, the Sons of the American Revolution, Society of Colonial Wars, the Maryland, Virginia and Connecticut historical societies and various clubs.

Dr. Steiner's death closes a useful career. He gave his time freely to the problems of organized medicine and counseled wisely in matters of its development. He made numerous contributions to the literature on internal medicine, pathology and medical history.

Horton Ryan Casparis ✦ professor of pediatrics at Vanderbilt University School of Medicine and pediatrician in chief at Vanderbilt University Hospital, Nashville, Tenn., died of heart disease in his hotel room after attending a meeting of the Southern Medical Association in Richmond, November 11, aged 51. Dr. Casparis was born at Round Mountain, Texas. He graduated at the University of Texas in 1915. He received his degree at the Johns Hopkins University School of Medicine, Baltimore, in 1919 and served an internship at the Willard Parker Hospital, New York. Later he was staff assistant at the Trudeau Sanatorium. He took postgraduate work at the Johns Hopkins Hospital and medical school until 1924, when he went abroad for a year to study in various European clinics.

Dr. Casparis joined the faculty of Vanderbilt University School of Medicine in the department of pediatrics in 1925, and in 1928 he became professor. He was chairman of the Section on Pediatrics of the American Medical Association from 1935 to 1936 and at one time held a similar position with the pediatric section of the Southern Medical Association. He was also a councilor of the latter. His affiliations included membership in the Davidson County Medical Society, the Tennessee State Medical Association, the American Pediatric Society, the American Academy of Pediatrics and the National Tuberculosis Association. He was a member of the liaison committee of the American Academy of Pediatrics and the National Tuberculosis Association and a director of the latter. At the time of his death he was a member of the committee on undergraduate medical education and a member of the council of the American Trudeau Society. He had been certified as a specialist by the American Board of Pediatrics and was a fellow of the American College of Physicians. He had also been chairman of the Advisory Committee on Maternal and Child Health Services of the U. S. Children's Bureau. Dr. Casparis had served as president of the Southern Tuberculosis Conference and twice held the office with the Tennessee Tuberculosis Association. He was president of the American Board of Pediatrics and in October of this year had been chosen president of the Southern Trudeau Society.

A member of the editorial board of the *American Journal of Diseases of Children*, Dr. Casparis had written numerous articles on tuberculosis in children, allergy and the various aspects of the mental health problem in children.

Henry Hall Forbes ✦ New York; College of Physicians and Surgeons, New York, 1890; an Affiliate Fellow of the American Medical Association; specialist certified by the American Board of Otolaryngology; a founder and early president of the New York Bronchoscopic Club; was elected president of the American Bronchoscopic Society in 1934; member of the American Laryngological Association, the American Laryngological, Rhinological and Otological Society and the American Broncho-Esophagological Association; fellow of the American College of Surgeons; formerly professor of laryngology at the New York Post-Graduate Medical School; veteran of the Spanish-American War; served overseas as a captain in the medical corps of the U. S. Army during World War I; major, medical reserve corps; consulting surgeon, diseases of the nose and throat, New York Post-Graduate Medical School and Hospital; consulting laryngologist, New York and Flower and Fifth Avenue hospitals; consulting otolaryngologist, Lutheran Hospital, New York, and Northern Westchester Hospital, Mount Kisco; bronchoscopist, New York Foundling and New York City hospitals; consulting bronchoscopist, St. Joseph's Hospital, Paterson; a trustee of the New York Dispensary and the Jenny Clarkson Home for Children; a delegate to several international medical congresses; aged 74; died, October 25, of coronary thrombosis.

Charles Virgil Mosby ✦ St. Louis; St. Louis College of Physicians and Surgeons, 1900; chairman of the board of directors of the publishing firm bearing his name; since 1906 publisher of medical books and journals such as the *American Journal of Obstetrics and Gynecology*, *American Heart Journal*, *Journal of Thoracic Surgery*, *Journal of Laboratory and Clinical Medicine*, *American Journal of Orthodontics and Oral Surgery*, *American Journal of Syphilis, Gonorrhea and Venereal Diseases*, the *Journal of Pediatrics*, *Surgery* and the *Journal of Allergy*; author of "Making the Grade" published in 1926, and "Little Journeys to the Homes of Great Physicians. William Beaumont—Physiologist. Augustus Charles Bernays—Surgeon. Williams McKim Marriott—Pediatrician," published in 1937; in 1938 was awarded the honorary doctor of science degree by the Bates College, Lewiston, Maine; aged 66; died, November 9, in the Grace Hospital, Detroit, of heart disease.

Frank Aloysius Roberts, Caldwell, N. J.; Medico-Chirurgical College of Philadelphia, 1895; member of the Medical Society of New Jersey and the American Urological Association; veteran of the Spanish-American War; in 1914 served on the Mexican border and during World War I as a captain in the medical corps of the U. S. Army; at one time affiliated with the Newark City Hospital, the old German Hospital, now the Newark Memorial Hospital, and the old New York Hospital; attending urologist at the Community Hospital, Montclair, and the Essex County Hospital, Cedar Grove; consultant to the Mountainside Hospital, Montclair, and St. Mary's Hospital, Passaic; aged 67; died, October 17, of coronary occlusion.

Eric Liljencrantz ✠ Commander, M. C., U. S. Naval Reserve, who had been called to active duty Nov. 1, 1940, was killed in an airplane accident while at sea near the U. S. Naval Air Station, Pensacola, Fla., November 5, aged 39.

Commander Liljencrantz was born in Oakland, Calif., Nov. 6, 1902 and graduated at Stanford University School of Medicine in 1929. On completion of his internship at the Highland-Alameda County Hospital, Oakland, he went abroad for a year to study radiology, first as voluntary assistant in the Surgical Clinic of the University of Kiel and later at the University of Berlin. For the year 1931-1932 he served at Stanford as assistant in medicine in the department of radiology. Since 1934 he had been assistant professor of medicine (radiology) at Stanford. In 1940 Commander Liljencrantz was granted leave of absence to fulfil his duties with the Bureau of Aeronautics in the Navy Department. He was consultant in neoplastic diseases to the Naval Hospital, Mare Island, and the Marine Hospital, San Francisco. Commander Liljencrantz was a specialist certified by the American Board of Radiology, Inc., and a diplomate of the National Board of Medical Examiners. He held membership in the American College of Radiology, the Aero Medical Association and the American Association of Industrial Physicians and Surgeons.

DIED WHILE IN MILITARY SERVICE

COMDR. ERIC LILJENCRANTZ, M. C., U. S. N. R.
1902-1942

In 1937 Pan American Airways began to consult Commander Liljencrantz on personnel problems encountered in the Pacific Division and in 1938 he organized for them the medical services of this division. Acting as flight surgeon for the division, Commander Liljencrantz made flights to Hawaii, China and New Zealand and conducted research on problems of aviation medicine. On going into active service he directed his attention chiefly to problems of night vision, publishing four reports on the subject. In 1941 he succeeded Capt. John R. Poppen as head of the Division of Aviation Medical Research of the Bureau of Medicine and Surgery and at the same time was appointed as official liaison officer from the Navy to the Committee on Aviation Medicine. In August 1942 the board of scientific advisers of the Institute of the Aeronautical Sciences appointed him director of the Aeromedical Research Laboratory, which the institute had expected to establish at the Guggenheim estate. Commander Liljencrantz had contributed to the literature on radiology and in 1939 was editor of the Cancer Handbook of the Tumor Clinic, Stanford University School of Medicine. In the field of aviation medicine he was a recognized leader. In time of war the loss of such men becomes of the greatest significance. Commander Liljencrantz by his qualities of leadership and by his character had earned the friendship and admiration of all who know him.

Benjamin Franklin Croutch ✠ Chicago; Loyola University School of Medicine, Chicago, 1918; fellow of the American College of Surgeons; associate in surgery at the University of Illinois College of Medicine from Nov. 1, 1934 until Sept. 1, 1940; member of the examining board of the U. S. Department of Interior from 1925 to 1937 and member of the U. S. Veterans Bureau from 1937 to 1940; served in the medical corps, U. S. Army, during World War I; on the staffs of St. Elizabeth's and the Illinois Central hospitals; aged 50; died, October 29.

Norvelle Wallace Sharpe, St. Louis; Beaumont Hospital Medical College, St. Louis, 1890; member of the Missouri State Medical Association; fellow of the American College of Surgeons; formerly vice president of St. Louis Medical Society; at one time on the staff of the U. S. Veterans Bureau; served during World War I; consulting surgeon City Sanitarium, City Isolation Hospital, City Infirmary, Home of the Friendless and the Chicago, Rock Island and Pacific Railway; aged 73; died, October 24, of cerebral hemorrhage.

Herbert Dale Collins ✠ Oklahoma City; University of Oklahoma School of Medicine, Oklahoma City, 1926; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; past president of the Oklahoma City Clinical Society; associate in surgery at his alma mater; lieutenant colonel in the medical reserve corps of the U. S. Army; attending surgeon, State University and Crippled Children's Hospital and St. Anthony's Hospital; aged 41; died, October 12, of generalized sepsis.

Hugh Watson Stephenson, Oakman, Ala.; Medical College of Alabama, Mobile, 1880; member of the Medical Association of the State of Alabama; past president of the Walker County Medical Society; at one time a member of the state house of representatives; member of the medical reserve corps during World War I; in 1939 was awarded a plaque by the Walker County Medical Society commemorating his sixty years of active practice; aged 87; died, October 21, of chronic nephritis and arteriosclerosis.

Algernon Brashear Jackson, Washington, D. C.; Jefferson Medical College of Philadelphia, 1901; formerly professor of bacteriology, public health and hygiene at the Howard University College of Medicine; fellow of the American College of Physicians; a founder and at one time surgeon in chief and superintendent of the Mercy Hospital, Philadelphia; formerly assistant surgeon in the outpatient department at the Philadelphia Polyclinic; author of "Jim and Mr. Eddy"; aged 64; died, October 22.

Fred Valentine Hibbs, Carroll, Iowa; State University of Iowa College of Medicine, Iowa City, 1902; member of the Iowa State Medical Society; past president of the Carroll County Medical Society; veteran of the Spanish-American War; at one time mayor of Lohrville and a member of the town council; member and one of the founders of the Carroll Clinic; aged 68; formerly chief of the medical staff of St. Anthony's Hospital, where he died, October 20.

David Thomas Jones ✠ Wausau, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1888; served on various advisory boards during World War I; chairman of the board of directors and chief of the staff of the Wausau Memorial Hospital; for many years preceptor at the University of Wisconsin, Madison; aged 82; died, October 20.

Albert Leroy Reuss ✠ Belleville, Ill.; Washington University School of Medicine, St. Louis, 1903; at one time served as city health officer and as county physician; formerly secretary of the board of health of Belleville; formerly assistant chief surgeon of the Southern Railroad; on the staff of St. Elizabeth's Hospital; aged 61; died, October 22, of coronary occlusion.

Julian Taylor Miller ✠ Medical Inspector, Commander, U. S. Navy, retired, Portsmouth, Va.; University of Virginia Department of Medicine, Charlottesville, 1892; entered the

regular navy in 1907 and retired May 1, 1933 on his own application after thirty years' service; formerly director of public welfare in Portsmouth; aged 70; died, September 21.

Elizabeth Carr Mallison, McKeesport, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1887; member of the Medical Society of the State of Pennsylvania; aged 77; on the staff of the Dixmont (Pa.) Hospital; senior on the psychiatry staff of McKeesport Hospital, where she died, October 19, of cerebral hemorrhage and hypertension.

F. Edward Burke ✠ Wakefield, R. I.; College of Physicians and Surgeons, Baltimore, 1898; an Affiliate Fellow of the American Medical Association; past president of the Washington County Medical Society; for many years health officer of South Kingston and school physician of Narragansett; aged 77; died, October 21.

John Denis Lucey ✠ Staten Island, N. Y.; Long Island College Hospital, Brooklyn, 1906; fellow of the American College of Surgeons; past president of the Richmond County Medical Society; for many years president of the board of directors and surgeon in chief at St. Vincent's Hospital; aged 68; died, October 19.

Emil Nicholas Kveton, Fort Wayne, Ind.; Loyola University School of Medicine, Chicago, 1938; member of the Indiana State Medical Association; a lieutenant in the medical corps of the U. S. Naval Reserve, which he entered last January; aged 28; was killed in action at sea, August 9.

KILLED IN ACTION

LIEUT. EMIL N. KVETON, M. C., U. S. N. R., 1913-1942

Napoleon McDonald Burnett ✠ Lamar, Colo.; Marion-Sims College of Medicine, St. Louis, 1899; member of the Colorado State Division of Public Health; at one time city and county health officer; aged 68; died, September 15, of tumor of the fifth cervical vertebra, probably metastatic from a carcinoma of the lung.

Clarence C. Del Marcelle, Green Bay, Wis.; Marquette University School of Medicine, Milwaukee, 1914; served during World War I; aged 53; died, October 11, of cerebral arteriosclerosis and a fracture of the vertebrae with severance of spinal cord as the result of an automobile accident seventeen years ago.

Louis C. Botkin, Ingram, Pa.; Jefferson Medical College of Philadelphia, 1881; member of the Medical Society of the State of Pennsylvania; past president of the Allegheny County Medical Society; for many years president of the Ingram borough council; aged 86; died, October 23.

Robert Milford Small, Auburn, Maine; Medical School of Maine, Portland, 1893; member of the consulting staff and at one time president of the staff at the Central Maine General Hospital, Lewiston; served as an Auburn councilman and as an alderman; aged 73; died, October 12.

George Frank Brooks, Stillwater, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1900; member of the Minnesota State Medical Association; served during World War I; aged 64; died, October 7, at his home in Marine on St. Croix.

Samuel Glenn Major ✠ Pittsburgh; University of Pittsburgh School of Dentistry, 1921; Harvard Medical School, Boston, 1927; fellow of the American College of Surgeons; surgeon to the Western Pennsylvania Hospital; aged 42; died suddenly, October 14.

James Corbin Avary, Atlanta, Ga.; Atlanta Medical College, 1882; member of the Medical Association of Georgia; at one time coroner of Fulton County; aged 86; died, October 19, in the Grady Hospital of injuries received when struck by a trolley car.

Frederick Bullwinkel ✠ Atlantic Highlands, N. J.; Harvard Medical School, Boston, 1923; for many years served as school physician; on the staff of the Monmouth Memorial Hospital, Long Branch; aged 45; died, October 20, in Sea Island, Ga.

Dorsey Funk Butterbaugh ✠ Elizabethtown, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1930; on the staff of the Columbia (Pa.) Hospital; aged 40; died, September 23, in North Manchester of cerebral hemorrhage.

William Henry Hope FitzGerald, New York; University of Vermont College of Medicine, Burlington, 1895; at one time on the staff of St. Francis Hospital, Hartford, Conn.; aged 70; died, October 21, in Stamford, Conn.

Martin Eugene Drake, Newton, Iowa; Western Reserve University Medical Department, Cleveland, 1885; Jefferson Medical College of Philadelphia, 1890; also a dentist and a pharmacist; aged 88; died, October 23.

Earl William McKelvey, Oscoda, Mich.; Detroit College of Medicine and Surgery, 1924; served during World War I; on the staff of the Mercy Hospital, Bay City; aged 49; died, October 8, of heart disease.

Estes Allen, Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1930; member of the Arkansas Medical Society; served overseas during World War I; aged 53; died, October 17.

Charles Waldron Adams, Cambridge, Mass.; Harvard Medical School, Boston, 1905; member of the Massachusetts Medical Society; on the staff of the Cambridge Hospital; aged 63; died, October 20.

Louis L. Burstien, Los Angeles; Drake University College of Medicine, Des Moines, 1908; formerly associated with the U. S. Veterans Bureau; served during World War I; aged 56; died, October 15.

George Hugh Parke, Pointe Claire, Que., Canada; McGill University Faculty of Medicine, Montreal, 1891; formerly a major in the Canadian Army Medical Corps; aged 72; died suddenly in October.

John Philip Haag, Williamsport, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1888; for many years served as a member of the board of education; aged 78; died, October 17.

Otto Ralph Honomichl, Hackett, Ark.; Kansas City (Mo.) College of Medicine and Surgery, 1922; member of the Arkansas Medical Society; aged 56; died, October 3, of cardiorenal disease.

Bunn Allen Dumbauld ✠ Webb City, Mo.; Kentucky University Medical Department, Louisville, 1903; served during World War I; aged 69; died, October 8, of hypertensive heart disease.

Thomas D. Kaylor, Barry, Ill.; Keokuk (Iowa) Medical College, 1895; member of the Illinois State Medical Society; aged 78; died, October 12, in the Blessing Hospital, Quincy.

George Elmer Peterman, Chicago; Dearborn Medical College, Chicago, 1904; for many years examiner for the Prudential Life Insurance Company; aged 71; died, October 25.

Elihu Kelley, Hazard, Ky.; Hospital College of Medicine, Louisville, 1896; aged 75; died, October 17, in the Hazard Hospital of peritonitis probably due to a ruptured appendix.

Walter C. Cheesman, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1899; aged 66; died, October 15, in the Hahnemann Hospital of mitral stenosis.

Harry Thomas Harr, Fayetteville, Ark.; University of Maryland School of Medicine, Baltimore, 1892; member of the Arkansas Medical Society; aged 73; died in September.

Robert H. Goodale, South Laguna, Calif.; University of Southern California College of Medicine, Los Angeles, 1907; aged 63; died, September 8, of heart disease and asthma.

William Franklin Hooper, Oklahoma City; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1890; aged 76; died, October 13.

Francis Page Adams, Dufur, Ore.; American Medical College, St. Louis, 1892; Bennett Medical College, Chicago, 1901; aged 85; died in October of coronary thrombosis.

Clifford Morgan Mitchell, Sanford, Fla.; Medical Department of Emory University, Atlanta, Ga., 1916; member of the Florida Medical Association; aged 53; died, October 5.

Orrin Joseph Smith, Denver; Columbus (Ohio) Medical College, 1882; aged 86; died, September 30, in the Good Samaritan Hospital of hypertension and myocardosis.

Frank A. Paden, Brownsville, Ore.; Hahnemann Medical College and Hospital, Chicago, 1907; aged 67; died, October 9.

Correspondence

THE PROFESSION AND NATIONAL LEADERSHIP

To the Editor:—This war is showing us that we need one another desperately. New responsibilities are being forced on all of us. As never before we realize the necessity of pulling together to fight the common enemy. But we cannot blindly ignore the confusion and division that still exist in this country in the third year of war.

But it takes more than diagnosis to cure a fractured limb. It requires alinement of the fragments plus the healing forces inherent in a man's body. And to give this nation unity and an affirmative fighting philosophy requires more than emphatic words as to what is wrong.

I write primarily to comment on the communication appearing in THE JOURNAL on May 2 entitled "The Doctor's Part in Building Morale Seen as Step of Total Victory." I wish to bear out the practicality of the philosophy outlined. The writer said in effect that as doctors we can bring the answer to division and bitterness in the nation. The prescription is honest apology. Recently two friends of mine, one an industrialist the other a labor leader, bitterly opposed, met with me. I told them that I had no ax to grind but was concerned about the sabotaging effect that lack of teamwork was having on the war effort and that I had brought them together to see if broken relationships as well as broken bones could not be knit provided the jagged ends were brought into alinement. Incidentally I related how honest and costly apology had worked in my home and office.

The result was that these two men bridged their differences and decided to pull together for the sake of the war effort. The immediate result was to prevent three imminent strikes, one of which it was estimated would have cost the country $100,000 a day. Their simple formula has been so effective that its spirit is taking hold in their industry right across the nation. I relate these facts to encourage the profession to use to the full the confidence people of all classes and stations in life put in us. For the fact that we are disinterested but not uninterested gives us as a profession tremendous leverage to bring the philosophy of teamwork to our communities and nation. Total war requires total effort by the total population. Here is an opportunity unmatched in history for the profession to provide the nation with leadership.

LORING T. SWAIM, M.D., Boston.

INTRAPERITONEAL ADMINISTRATION OF SULFANILAMIDE

To the Editor:—I wish to call attention to an error contained in an editorial, Intraperitoneal Administration of Sulfanilamide, in THE JOURNAL, July 4, page 796. The statement is made that "Jackson and Coller found in experiments on dogs that the concentration of the drug in the portal vein was forty times greater than in the jugular vein. There may be a special affinity of the liver for the drug." However, in the reference itself, The Use of Sulfanilamide in the Peritoneum, by Howard C. Jackson and Frederick A. Coller (THE JOURNAL, January 17, p. 194) the statement is "Thirty minutes after the administration of the drug the difference between the sulfanilamide content of the portal vein blood and that of the peripheral blood was approximately 40 per cent of the peripheral blood level. At the end of four hours the concentrations were the same."

Obviously, the reference quotes the original paper inaccurately. Chart 9 in the original paper gives a level of 21 mg. for the portal vein and 15 mg. for the jugular vein concentrations at the end of one half hour in a 12 Kg. dog.

This editorial has been quoted widely in support of the contention that hepatitis may be caused by a simple quantitative factor, i. e. high portal venous sulfanilamide concentration. But the only data presented are those of a single observation of a 21/15 ratio between the two circulations. Jackson and Coller themselves admit that the fact that "a large number of experiments was not carried out probably detracts from the accuracy of our figures."

My co-workers and I have performed experiments (to be published) on normal animals and have found that the systemic and portal venous concentrations of sulfonamides are the same during peritoneal absorption and therefore the drug level in the systemic circulation is a reliable index of the concentration in the portal vein.

ALEXANDER E. PEARCE, FIRST LIEUTENANT, M. C., A. U. S.

POTASSIUM THIOCYANATE TREATMENT OF HYPERTENSION

To the Editor:—In the article on fatal poisoning from potassium thiocyanate treatment of hypertension (Russell, W. O., and Stahl, W. C.: THE JOURNAL, August 8, p. 1177) certain statements are made which are contrary to our conception of the method of control of thiocyanate medication. We are using thiocyanates almost exclusively in the treatment of essential hypertension, with very encouraging results. So far we have encountered no serious toxic reactions; mild pruritic rashes are frequently encountered when the blood level approaches 15 mg. per hundred cubic centimeters and can be controlled by careful control of the blood level; transient, mild mental confusion is seen very frequently but so far has not been found troublesome. We give small doses (0.06 to 0.2 Gm. daily) and make estimations of the blood thiocyanate level every two weeks at the onset of treatment and every two to three weeks until the level is stabilized within the therapeutic and below the toxic level and then every month. We attempt to establish a level of 8 to 12 mg., never permitting the level to exceed 15 mg.

Russell and Stahl state that their patient died while he was getting the "usually prescribed amount of the drug." Their protocol shows that he received 6 grains (0.4 Gm.) daily for two weeks, with a blood level of 4.5 mg. after one week and 15.2 mg. after two weeks. In spite of the level of 15.2 the same dose, which brought the blood level from presumably near 0 to 15.2 in two weeks, was continued for five more days, with symptoms of toxicity for the last two days. The blood level was not taken until three days after admission, when it was 21.7 mg. We consider a blood level of 15 mg. as definitely the upper limit permitted and do not agree that 6 grains daily (after the attainment of that level by that dose in only two weeks) is the "usually prescribed dose."

Nine cases of fatal thiocyanate poisoning are reviewed. In the 2 cases in which blood levels were determined, they were found to be 18.7 and 21.7 mg., definitely above the safe levels of 8 to 14 mg. (Barker, M. H.: The Blood Cyanates in the Treatment of Hypertension, THE JOURNAL, March 7, 1936, p. 762. Wald, M. H.; Lindberg, H. A., and Barker, M. H.: The Toxic Manifestations of the Thiocyanates, *ibid.*, March 25, 1939, p. 1120). In 2 others strong traces "were found in various viscera." In 1 other from 9.7 to 18 mg. was found in the tissues. Because potassium thiocyanate is distributed extracellularly (Wallace, G. B., and Brodie, B. B.: Distribu-

tion of Administered Iodide and Thiocyanate in Comparison with Chloride, and Their Relation to Body Fluids, *J. Pharmacol. & Exper. Therap.* **61**:397 [Dec.] 1937; Distribution of Administered Iodides and Thiocyanates in Comparison with Chloride in Pathological Tissues, and Their Relation to Body Fluids, *ibid.* **61**:412 [Dec.] 1937) we assume that the blood levels were much higher than the tissue levels and probably in the toxic range. "In the 6 cases in which thiocyanate was given therapeutically for the hypertension . . . in all instances the patient received no more than the standard accepted therapeutic dose," yet two received 9 Gm. in ten days, two 9.77 Gm. in fifteen days, one 14.4 Gm. in eighteen days and one (the author's) 5.6 Gm. in fourteen days. We never give more than 6 grains (0.4 Gm.) daily and seldom give more than 3 grains (0.2 Gm.). The doses in these fatal cases are far greater than are necessary or desirable.

The remarkable statement is made "While the level of blood cyanate was studied in only 2 of the 6 cases treated for hypertension, essentially the same dosage was administered in the other 4 cases over comparable periods of time. Whereby it may be reasonably assumed that the blood cyanate values in those cases could not have exceeded significantly the levels in the cases in which the blood cyanates were determined."

As long as thiocyanate therapy is based on "reasonable assumptions" it will continue to be dangerous. Experience here and elsewhere shows that thiocyanate concentrations are notoriously variable and unpredictable. Dosage is not a reliable guide, and blood determinations must be made at frequent intervals. Not only is thiocyanate retention an individual problem, but it varies greatly in the same individual from time to time (Goodman, Louis, and Gilman, Alfred: The Pharmacological Basis of Therapeutics, New York, Macmillan Company, 1941, pp. 573-574).

Further, Russell and Stahl state that renal damage increases the hazard because of uncertain and unpredictable excretion. It has been our observation that the blood level has little correlation with renal efficiency; in fact, we find that patients with severe impairment of renal function may require larger than average doses to maintain an average blood level.

Thiocyanates, when properly administered and controlled by continuous blood level determinations, offer considerable promise in the treatment of hypertension and are as safe as most other potent drugs. If not properly controlled, they may be very dangerous.

KENNETH A. CROCKETT, LIEUTENANT (J. G.),
M. C., U. S. N. R.
LOUIS G. MOENCH, M.D., Salt Lake City.
From the Department of Medicine, Salt Lake Clinic.

"THE CHANGING CONCEPTS IN PATHOLOGY"

To the Editor:—Reading your editorial "The Changing Concepts in Pathology," I thought the author might be interested in the definition of pathology current at Yale during my apprenticeship there: "Pathology is the study of the reaction of biologic systems to injury." This is a broad definition. Incidentally a friend, an economist, once asked me how the demands of my specialty left any time for me to keep informed concerning his specialty. I replied that according to my definition of pathology it included a good deal of social sciences.

ISABELLA H. PERRY, M.D., San Francisco.
Assistant Professor of Pathology, University of California Medical School.

POLIOMYELITIS

To the Editor:—Congratulations. The October 17 issue was one of the best issues of THE JOURNAL that it has been my pleasure to read. Since my training has been devoted primarily to physical medicine, I have long been interested in the problem of poliomyelitis.

To me the work of Dr. Sabin on the pathology of poliomyelitis presents a decided step forward. I have never been able to convince myself that the primary damage was the result of edema in the cord, regardless of how strongly others felt about it. I was glad to note that Dr. Sabin did not contradict the work of Hurst and that he found that "neuronal damage was not due to edema and exudate of the inflammatory reaction." This also offers a possible explanation of why fever therapy and the administration of concentrated salt solution does not relieve the condition through reabsorption of the edema.

The article by Dr. McCarroll appears to me to be the work of a man of narrow vision. In one respect, however, the article may serve a very useful purpose. It may arouse and stimulate thought concerning Sister Kenny. She is being followed, almost blindly, by the medical profession as well as the public. Any attack on her theories based on a sound foundation will serve to prevent undue deification by the public and blind obedience by the medical profession.

Dr. McCarroll's attacks on physical therapy demonstrate the narrowness of his vision by the limited way in which he has treated his patients. According to his observations, untreated patients have far more chance of recovery than those who receive splints alone or who are splinted and treated with physical therapy. No mention is made of any patients treated without immobilization but with physical therapy. Therefore he cannot rightly conclude, as he has done, that "it can be readily seen that no particular form of therapy provided results that were outstanding."

Another fact which he ignores completely is that, regardless of the immobilization, physical therapy did produce a much higher percentage of normal, good and fairly well patients than those who received no physical therapy. I do not doubt that a physical therapist with foresight could have improved on these results.

His adherence to the old theory of subsidence of edema and how partial paralysis can "easily be explained on this basis" seems to indicate that he is looking for an easy "explanation" rather than the true facts regarding poliomyelitis.

Lastly, the fact that "physical therapy will never prove to be the answer to our problems in the disease" appears to be quite true. The "ounce of prevention" adage still holds good. But what is to become of those occasional cases which may still be encountered? For them, physical measures will always be an adjuvant and probably the treatment of choice in the rehabilitation of these unfortunate individuals.

Regardless of the final outcome of Sister Kenny and her methods, I feel that she has contributed greatly to our knowledge, if only for the reason that it has stimulated new thought. I myself believe that at this time her treatment offers the greatest hope for maximum recovery without deformity; that, regardless of the unfavorable reaction of physicians in England, she does offer an improved routine for treating the complications of poliomyelitis; but, finally, I believe that eventually a modification of her method will be the answer to the physical treatment of the complications of poliomyelitis.

I hope that the possibility for controversy offered by Dr. McCarroll's article will bring forth some new food for thought on this important subject.

CHRIS J. MCLOUGHLIN, CAPTAIN, M. C., A. U. S.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 15-16, 1943. Sec., Council on Medical Education and Hospitals, Dr. H. G. Weiskotten, 535 North Dearborn Street, Chicago.

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, Nov. 14, page 861.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral.* Chicago, Dec. 4-5. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Feb. 15. Final date for filing application is Jan. 1. Asst. Sec., Dr. William A. Werrell, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written. Part I.* Various centers, Feb. 13. *Oral. Part II.* May 1943. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* June. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* New York, May or June. Final date for filing application is March 1. Sec., Dr. Dean M. Lierle, 1500 Medical Arts Bldg., Omaha, Neb.

AMERICAN BOARD OF PEDIATRICS: *Written.* Locally, Feb. 12. *Oral.* St. Louis, March 27-28. Final date for filing application is Dec. 1. New York, April 24-25. Final date for filing application is Jan. 1. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF PSYCHIATRY & NEUROLOGY: Detroit, prior to the meeting of the American Psychiatric Association. Final date for filing application is March 1. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., N.W., Washington, D. C.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 12-14. Sec., Dr. Gilbert, J. Thomas, 1409 Willow St., Minneapolis.

North Dakota July Report

The North Dakota State Board of Medical Examiners reports the written examination for medical licensure held at Grand Forks, July 7-10, 1942. The examination covered 13 subjects and included 100 questions. An average of 75 per cent was required to pass. Two physicians were licensed to practice medicine by reciprocity and 2 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
University of Minnesota Medical School		(1936)	1
Temple University School of Medicine		(1941)	1
University of Manitoba Faculty of Medicine		(1941)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Loyola University School of Medicine		(1939)	Illinois
Northwestern University Medical School		(1935)	Illinois

School	LICENSED BY ENDORSEMENT	Year Grad.
University of Minnesota Medical School		(1935), 1938)

Maryland Reciprocity Report

The Board of Medical Examiners of Maryland reports 31 physicians licensed to practice medicine by reciprocity and 12 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners from Jan. 1 through Aug. 31, 1942. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine		(1936)	Illinois
Emory University School of Medicine		(1939)	Georgia
Northwestern University Medical School		(1938)	W. Virginia
The School of Medicine of the Division of the Biological Sciences		(1937)	Illinois
Indiana University School of Medicine		(1938)	Indiana
State University of Iowa College of Medicine		(1925)	Kansas
University of Maryland School of Medicine and College of Physicians and Surgeons		(1937)	New York
Tufts College Medical School		(1911)	Maine
University of Nebraska College of Medicine		(1934)	Nebraska
Columbia University College of Physicans and Surgeons		(1901), (1923), (1936), (1938)	New York
Long Island College of Medicine		(1926) (1936)	New York, New Jersey
New York University College of Medicine		(1935)	New York
University of Cincinnati College of Medicine		(1937)	Ohio
Western Reserve University School of Medicine		(1938)	Ohio
Jefferson Medical College of Philadelphia		(1907), (1940) (1926)	Penna., New York
Temple University School of Medicine		(1939)	Penna.
University of Pittsburgh School of Medicine		(1935)	Penna.
Meharry Medical College		(1941)	Tennessee
Vanderbilt University School of Medicine		(1941)	N. Carolina
Medical College of Virginia		(1939)	Virginia
University of Virginia Department of Medicine		(1933), (1938, 2)	Virginia
University of Toronto Faculty of Medicine		(1938)	Penna.
Universität Zürich Medizinische Fakultät		(1917)	New York

School	LICENSED BY ENDORSEMENT	Year Grad.
College of Medical Evangelists		(1942)
University of Colorado School of Medicine		(1937)
George Washington University School of Medicine		(1941)
Georgetown University School of Medicine		(1938)
Johns Hopkins University School of Medicine		(1931), (1932), (1936), (1937), (1938)
University of Maryland School of Medicine and College of Physicians and Surgeons		(1933)
Harvard Medical School		(1928)
University of Pennsylvania School of Medicine		(1931)

Maine July Report

The State of Maine Board of Registration of Medicine reports the written examination for medical licensure held at Augusta, July 7-8, 1942. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty-one candidates were examined, 18 of whom passed and 3 failed. Four physicians were licensed to practice medicine by reciprocity and 4 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
George Washington University School of Medicine		(1941)	1
Johns Hopkins University School of Medicine		(1900), (1941)	2
Boston University School of Medicine		(1941)	1
Harvard Medical School		(1933), (1942)	2
Tufts College Medical School		(1911), (1940)	2
Long Island College of Medicine		(1942)	1
University of Pennsylvania School of Medicine		(1903), (1941)	2
McGill University Faculty of Medicine		(1938)	1
Deutsche Universität Medizinische Fakultät, Prag		(1937)	1
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1929)	1
Medizinische Fakultät der Universität Wien		(1938)	1
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest		(1939)	1
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia		(1937), (1940)	2

School	FAILED	Year Grad.	Number Failed
Harvard Medical School		(1942)	1
Columbia Univ. College of Physicians and Surgeons		(1942)	1
Université de Lausanne Faculté de Médecine		(1940)	1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine		(1916)	Arkansas
University of Louisville School of Medicine		(1925)	Kentucky
Hahnemann Medical College and Hospital of Philadelphia		(1939)	Maryland
Jefferson Medical College of Philadelphia		(1913)	Penna.

School	LICENSED BY ENDORSEMENT	Year Grad.
Boston University School of Medicine		(1936)
Woman's Medical College of Pennsylvania		(1932)
Medical College of the State of South Carolina		(1939)
Karl-Franzens-Universität Medizinische Fakultät, Graz		(1922)

Oregon July Report

The Oregon State Board of Medical Examiners reports the written examination for medical licensure held at Portland, July 22-24, 1942. Eleven candidates were examined, all of whom passed. One physician was licensed to practice medicine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Number Passed
Rush Medical College		(1941)	1
University of Chicago, The School of Medicine		(1941)	1
Indiana University School of Medicine		(1938)	1
University of Kansas School of Medicine		(1941)	1
University of Oregon Medical School		(1937), (1941, 4)	5
University of Wisconsin Medical School		(1938)	1
Osteopath *			1

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine		(1935)	Minnesota

* Licensed to practice surgery only.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Harrison Narcotic Act: Conspiracy Between Physician and Company Selling Narcotics.—The Harrison Narcotic Act provides that it shall be unlawful for any person to obtain by means of an official order form any of the drugs covered by the act for any purpose other than the use, sale or distribution thereof in the conduct of a lawful business in such drugs or in the legitimate practice of his profession. The defendants, Direct Sales Co., Inc., Dr. John Victor Tate, and certain others who pleaded guilty, were charged with a conspiracy to violate this proscription and were found guilty by a jury. Thereafter the defendants named made motions for a new trial and for arrest of judgment which came on for hearing before the U. S. district court, western division, South Carolina.

The evidence showed that the Direct Sales Company solicited the business of Dr. Tate by means of catalogs and circulars sent to him every ten days. Narcotics were not listed in the catalog itself but the company inserted therein a sheet of paper approximately 4 inches wide by 5½ inches long, sometimes colored pink and sometimes blue, on which was listed morphine sulfate. It offered tablets of morphine sulfate for sale in lots of 500, 1,000, and 5,000 ¼ and ½ grain (16 and 32 mg.) tablets, and the prices were from 30 to 40 per cent less than could be obtained elsewhere. The evidence showed that a narcotic agent of the bureau of narcotics visited the office of the company in 1936. He told the officers that it was his experience that when a physician ordered ½ grains of morphine sulfate it could be assumed that it was to be used for other than legitimate purposes. The average physician throughout the United States, the agent further explained, would purchase from 200 to 400 ¼ grain tablets of morphine sulfate in one year. He showed to the officers a list of two hundred and four names of physicians who had been convicted of violations of the narcotic laws and, with the officers' permission, investigated the company's records. He discovered and so informed the company that fifty-five of the two hundred and four physicians were its customers. He pointed out that the best known companies listed morphine in lots not to exceed 100 ¼ and ½ grain tablets, whereas the Direct Sales Company was listing it in lots of 500, 1,000 and 5,000. He asked the company to limit the amount to be sold on one order form to 1,000 ½ grain tablets, to which it agreed. He testified that the president of the company told him that he had ordered 5,000 ounces of morphine in the year 1936. The evidence showed that the company did an annual gross business of from $300,000 to $350,000, and the government contended that its principal business was dealing in morphine. The United States commissioner of narcotics asked the company to discontinue the giving of discounts on narcotics so as further to reduce sales. The company complied with this request but immediately listed prices with the discount already figured off.

Dr. Tate, according to the evidence, had been sending in order forms for morphine sulfate on an average every five days. All orders were for 1,000 ½ grain tablets, with the exception of one submitted on June 28, 1939, in which he ordered 1,000 ½ grain tablets and 100 ¼ grain tablets. On that occasion the company filled his order for the 1,000 ½ grain tablets and wrote a letter to him requesting that he submit another order form for the remainder. It was contended by the government that this letter, while informing the physician of the rule that only 1,000 tablets could be ordered on one order form, suggested to him that all he needed to do was to split his purchase up into different order forms. This letter was so understood by Tate, it was argued, as shown by the fact that during the succeeding thirty days he ordered 6,000 ½ grain tablets, or 1,000 more than in any other thirty day period. These orders came with regularity; on many occasions one shipment was in the mail to Dr. Tate while his order form for another lot was on the way to the company. With negligible exceptions, Dr. Tate ordered no other preparations and he ordered no codeine.

Expert witnesses for the government testified that the standard dose of morphine was from ⅛ grain (8 mg.) to ¼ grain, and in rare instances ½ grain. The court said that the company was bound to know that the volume of morphine being purchased by Dr. Tate could not by any stretch of the imagination be dispensed by him in the course of the legitimate practice of medicine and must therefore have known that he was diverting it into unlawful channels, particularly after it had been informed that 26.96 per cent of all physicians in the United States convicted of violations of narcotic laws were its customers. The company contended that because it did not know Dr. Tate or any of the other defendants it could not conspire with them. Its dealings with the physician, the court pointed out, were over a period of years. It knew that he could not lawfully dispense the amount of morphine he was purchasing. These facts were sufficient to justify the jury in concluding that the company, with this knowledge, was combining with others to dispose of the drugs unlawfully. The company from time to time changed the form of its advertisements of narcotics so as to keep continuously before the physician attractive prices for large lots. It was as though, the court said, the company's own salesman every ten days came around and personally solicited, using the arguments set forth in the advertisements, all the while knowing the impossibility of the drugs being used lawfully and that if they were used unlawfully other persons were associated with the physician in such use. Knowing this, the company solicited, encouraged, instigated, induced, counseled and aided Dr. Tate and his associates. The decision does not describe in detail the manner in which the physician disposed of the narcotics, although one of the defendants who admitted guilt testified that "one of the purchases" he made from Dr. Tate was in a bottle of the defendant company.

In the opinion of the court, the evidence was sufficient to justify the verdict of guilty, and the defendants' motions for a new trial and for arrest of judgment were denied.—*United States v. Direct Sales Co., Inc., 44 F. Supp. 623 (1942).*

Drugs: Patentability of Drug Used to Relieve the Pain of Cancer.—The petitioner, the Canadian-American Pharmaceutical Company, commenced an action against the Commissioner of Patents to obtain a patent on ensol, a drug for reducing the pain of cancer, and on processes for its manufacture. The district court dismissed the complaint on the ground that the drug was not sufficiently reliable, useful and important to warrant the grant of a patent. The petitioner then appealed to the United States Court of Appeals for the District of Columbia.

The physician who originated ensol, Dr. Hendry C. Connell, testified that he had supervised its use in 800 to 1,000 cases of painful cancer and that in 90 per cent of those cases pain was reduced and less sedative was required. Pain was also reduced, according to the evidence, in 279 of 289 cases of painful cancer which were studied by his father, a former dean of the Medical Faculty of Queen's University, and in many of those cases relief was immediate and complete. Another physician testified that he had treated 18 cancer patients with ensol, that pain was "definitely a symptom" in 14 and that the pain was reduced in 12. More than one thousand physicians, it was shown, have administered the drug in cases of cancer, and their "almost unanimous opinion" was said to be that it relieved pain. Two independent physicians investigated ensol for the Ontario government and they testified that it reduces the pain of cancer in the great majority of cases. The Ontario government's Commission for the Investigation of Cancer Remedies reported that "In the great majority of cases treated there appears to be relief of pain. . . . It seems clear from the evidence of case histories, physicians' reports and the examination of patients that Ensol . . . used according to directions, is harmless and that it produces no undesirable immediate or remote effects. Improvement is manifested by lessening of pain and tension." There was evidence, however, that ensol often caused "transient pain."

The Commissioner of Patents, in justifying a denial of the patent, relied on a series of experiments which indicated that ensol did not check the growth of cancer tumors in mice and rabbits. This evidence, the court said, did not throw any sub-

stantial doubt on the proposition that the drug usually reduces the pain of cancer in man. It may be, said the court, that some medical scientists would discourage the use of ensol pending further tests. Whether its use should be encouraged or discouraged, however, was not for the court to decide. The issue was whether ensol under the evidence in the record had been clearly shown to have utility within the meaning of the patent law. On all the evidence the court held that it was clear that ensol does, in many cases, reduce the pain of cancer and that it causes no serious harm. The judgment denying a patent was therefore reversed.—*Canadian-American Pharmaceutical Co. v. Coe, 126 F. (2d) 847 (1942).*

Malpractice: Liability of Surgeon for Negligence of Anesthetist.—The plaintiff engaged the defendant surgeon to perform a major abdominal operation, and arrangements were made for another physician, also a defendant in this case, to administer a spinal anesthetic. In attempting to administer the anesthetic, the anesthetist broke the needle, a piece about 2½ inches long (6.4 cm.) remaining embedded in the plaintiff's back. On being informed of the accident, the surgeon secured another needle, administered the anesthetic and completed the operation. Some nine days later, after the plaintiff had recovered sufficiently from the abdominal operation, the defendant surgeon removed the broken needle. Subsequently the plaintiff commenced an action for malpractice against the defendant surgeon and the defendant anesthetist. At the conclusion of the plaintiff's evidence, the trial court sustained a motion for a directed verdict in favor of each of the defendant physicians, and the plaintiff appealed to the court of appeals of Ohio, Summit County.

The evidence established the fact that if a needle used to administer a spinal anesthetic is properly inserted it can, with little force, be thrust through soft tissues to its proper destination. The needle in the present case, however, had contacted the bony part of the spine and had not followed a course through soft tissue. The court was of the opinion that while the breaking of the needle did not permit the application of the rule of evidence known as res ipsa loquitur, nevertheless the breaking of the needle under the circumstances, coupled with its location outside of the channel of soft tissues and against the bone, established a prima facie case of negligence sufficient to necessitate an explanation from the anesthetist.

Concerning the liability of the defendant surgeon, however, the court held that the evidence did not establish a prima facie case of negligence. In reaching this conclusion the court said that it was mindful of authorities which hold that, when one physician, acting in concert with another in the performance of an operation, perpetrates an act of malpractice, the other may be held liable for the acts of the tort-feasor if he observes such tortious conduct and lets it continue without objection, or if he fails to observe and act on that which, in the exercise of ordinary care and diligence under the circumstances, he should have observed and acted on. The defendant surgeon and the plaintiff entered originally into a consensual contract. At the time, the parties understood that the defendant surgeon was not to administer the anesthetic but was only to perform the operation. The surgeon suggested that the anesthetist be engaged and no objection to this was interposed by the plaintiff, and the latter accepted the services of the anesthetist. Although the defendant surgeon actually engaged the anesthetist, nevertheless a separate contract was thus created between the plaintiff and the anesthetist by implication. Under these circumstances each physician was engaged to perform a separate and distinct work, independent of the other. The trial court did not err, therefore, in directing a verdict in favor of the surgeon.

The judgment in favor of the defendant anesthetist was reversed.—*Wiley v. Wharton, 41 N. E. (2d) 255 (Ohio, 1941).*

Malpractice: Tetanus Following Failure to Sterilize Wound.—The plaintiff's son, a boy aged 10 years, sustained a crushing injury to the middle finger. The defendant physician, who was called to treat the injury, arrived about half an hour later and found that considerable blood had clotted about the finger. Without any cleansing or preparation, he lifted the nail slightly and squeezed tincture of merthiolate underneath it, packed the finger in metanic jelly (5 per cent tannic acid, 4 per cent benzyl alcohol and metaphen 1:5,000 in a water soluble base) and bandaged it. This treatment was continued for several days until the patient showed symptoms of tetanus. The patient was taken to a hospital where another physician administered tetanus antitoxin, but death resulted from tetanus the following day. In a subsequent suit for damages against the defendant physician, the jury found for the defendant. The trial court granted a new trial and the defendant appealed to the district court of appeal, first district, division 1, California.

It is well settled, said the court, that in undertaking the treatment of a patient a physician impliedly contracts and represents not only that he possesses the reasonable degree of skill and learning possessed by others of his profession in the locality but that he will use reasonable and ordinary care and skill in the application of such knowledge to accomplish the purpose for which he is employed. If injury is caused by a want of such skill or care on his part, he is liable for the consequences. The plaintiff in this case made no allegation that the defendant lacked the requisite skill and knowledge but contended that he failed to apply it. It was urged that there was no proper examination of the wound, no cleansing and no proper sterilization and that the application of the metanic jelly operated to seal in any bacilli that were present and thus directly induced the fatal infection. A physician called by the plaintiff testified that under the circumstances of the case a use of reasonable medical care and skill by the attending physician demanded a thorough cleaning of the finger and that the finger should be given free access to the air to overcome any anaerobic tetanic germs. Other witnesses, called by the defendant, also stated that in the case of such a wound as was involved in this case ordinary care demanded a thorough cleansing and the application of an antiseptic. The court concluded that it was a reasonable inference to be drawn from the evidence that the infection would not have occurred if the wound had been properly cleansed and "antisepticized."

An instruction to the jury to which the plaintiff objected, and which prompted the trial court to grant a new trial, directed the jury to find for the defendant physician if it believed from the evidence that in deciding not to administer tetanus antitoxin he possessed and exercised the degree of skill, learning and care ordinarily possessed and exercised by physicians in the same line of practice in the same or similar localities. The vice in this instruction, said the appellate court, is that it in effect told the jury to disregard all facts bearing on the defendant's failure to cleanse and sterilize the wound or any other act of negligence and to consider only the issue of failure to administer the tetanus antitoxin. This instruction, in the opinion of the court, was prejudicially erroneous because it excluded an issue that was supported by evidence, and in giving it to the jury error was committed.

The order of the trial court granting a new trial was therefore affirmed.—*Pierce v. Paterson, 123 P. (2d) 544 (Calif., 1942).*

Accident Insurance: Death from Pneumonia Following Operation.—When an insured dies from pneumonia following a total hysterectomy, the death does not, said the court of appeal of Louisiana, come within the provisions of an accident insurance policy which defines the term injury as "bodily injury which is the sole cause of the loss and which is effected solely through accidental means while this policy is in force."—*Waller v. Continental Casualty Ins. Co., Inc., 7 So. (2d) 383 (La., 1942).*

Society Proceedings

COMING MEETINGS

American Society of Anesthetists, New York, Dec. 10. Dr. Paul M. Wood, 745 Fifth Ave., New York, Secretary.

Annual Forum on Allergy, Cleveland, Jan. 9-10. Dr. Jonathan Forman, 956 Bryden Rd., Columbus, Ohio, Secretary.

Puerto Rico, Medical Association of, Santurce, Dec. 11-13. Dr. E. Martinez Rivera, P. O. Box 3866, Santurce, Secretary.

Radiological Society of North America, Chicago, Nov. 30-Dec. 4. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.

Society for the Study of Asthma and Allied Conditions, New York, Dec. 5. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.

Society of American Bacteriologists, Columbus, Ohio, Dec. 28-30. Dr. W. B. Sarles, Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1932 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Fort Wayne, Ind.

9:275-308 (Sept.) 1942

Gastric Secretion in Newborn. M. H. F. Friedman, Philadelphia. —p. 275.
*Acidity of "Ulcer Bearing Area" of Duodenum in Normal Persons. J. E. Berk, Fort Dix, N. J.; M. E. Rehfuss and J. E. Thomas, Philadelphia.—p. 276.
Some Observations on Patient with Ileostomy Bearing on Diagnosis of "Irritable Colon." E. S. Emery Jr., Boston.—p. 281.
Segmental Spasms of Esophagus and Their Relation to Parkinsonism. A. Penner and L. J. Druckerman, New York.—p. 282.
Redundant Gastric Mucosa Simulating Carcinoma of Stomach. H. J. Moersch and J. F. Weir, Rochester, Minn.—p. 287.
Benign Submucosal Tumors of Stomach: Gastroscopic Study. R. Schindler, Chicago; D. J. Sandweiss, Detroit, and I. L. Mintz, Los Angeles.—p. 289.
Mode of Laxative Action of Phenolphthalein. P. Blick, J. B. Berardi and O. Wozasek, Chicago.—p. 292.
Effect of Gastric Hypersecretion on Reaction and Neutralizing Ability of Contents of First Part of Duodenum in Normal Dogs. J. E. Berk, J. E. Thomas and M. E. Rehfuss, Philadelphia.—p. 297.
Impending Gangrene of Foot Following Treatment for Pruritus of Jaundice with Ergotamine Tartrate: Report of Case. L. A. Smith and G. B. Eusterman, Rochester, Minn.—p. 301.
Contributions Made to Knowledge in Regard to Pancreas in 1941. R. Elman and A. M. Large, St. Louis.—p. 303.
Plea for Early Diagnosis of Cancer of Colon. K. Brittain, Rochester, N. Y.—p. 307.

Acidity of Ulcer Bearing Area in Duodenum.—The acidity and the neutralizing ability of the contents of the first part of the duodenum in normal persons were determined by Berk and his co-workers by simultaneously aspirating material from the pars pylorica and the duodenal bulb at intervals of ten minutes with a specially constructed double lumen tube and a method that permitted more or less fluoroscopic control and proof of the position of the tube. Specimens were collected for half an hour before breakfast after a fast of twelve hours and for two hours after an Ewald meal. Twenty-three experiments were accepted as being technically satisfactory. These involved 2,225 separate determinations. The four readings made in the fasting state were averaged to give a single fasting value. The data show that the important "ulcer bearing" first part of the duodenum in normal persons is an acid area with an average p_H in the fasting state of about 5.6 and after an Ewald meal of about 5. The duodenal bulb in normal subjects is endowed with a capacity to neutralize, buffer and dilute gastric chyme that generally exceeds the physiologic needs. Free acid is usually not present in the contents of the duodenal bulb in normal persons; if not absent its presence cannot be construed as an abnormal finding. The neutralizing ability of the contents of the first part of the duodenum is ineffective (p_H 3.5 or less) in many normal subjects at some time after an Ewald meal. Usually the extent to which the neutralizing ability is overcome is not great, and the duration of its ineffectiveness is short. None of the customary measures of gastric acidity in normal persons can be used as a reliable index of the behavior of the corresponding effective acidity (p_H) of the duodenal bulb contents. It is of physiologic interest that normal persons exhibit a neutralizing ability in the first part of the duodenum which is decidedly inferior to that of normal dogs, which are notoriously resistant to peptic ulceration and rarely, if ever, display a naturally occurring chronic duodenal ulcer. As the values for gastric acidity in dogs studied were distinctly greater than those of man, there is some support for the thought that perhaps the factors that cause chronic duodenal ulcer to develop in man lie as much in deficient duodenal neutralization as in gastric hypersecretion, if not more.

American Journal of Hygiene, Baltimore

36:1-116 (July) 1942

Influence of Conditions of Latency on Merozoite Production and Gametocyte Survival in Plasmodium Cathemerium Infections of Canaries. G. H. Boyd and S. W. Gilkerson, Athens, Ga.—p. 1.
Studies on Host-Parasite Relationships of Untreated Infections with Plasmodium Lophurae in Ducks. R. Hewitt, Wilson Dam, Ala.—p. 6.
Occurrence of Salmonella in Lymph Glands of Normal Hogs. H. L. Rubin, College Station, Texas; M. Scherago and R. H. Weaver, Lexington, Ky.—p. 43.
Tuberculosis Among Massachusetts School Children: III. Study of Contact Cases; Report on Massachusetts Ten Year Program. E. P. Hutchinson and A. S. Pope, Boston.—p. 48.
Antibodies in Human Serum Which Neutralize the Viruses of Equine Encephalomyelitis: Experience with Intraperitoneal Mouse Protection Test. F. H. Wright, New York.—p. 57.
*Observations on Occurrence of Icterus in Brazil Following Vaccination Against Yellow Fever. J. P. Fox, C. Manso, H. A. Penna and M. Pará, Rio de Janeiro, Brazil.—p. 68.

Icterus Following Yellow Fever Vaccination.—The study by Fox and his associates was conducted with the support and under the auspices of the International Health Division of the Rockefeller Foundation and the Ministry of Health and Education of Brazil. The study is concerned with new major occurrences in Brazil of a serious disease associated with icterus which has followed vaccination against yellow fever. Although three separate vaccine lots have been clearly related to these occurrences, the participation of an additional factor not contained in the vaccines has been strongly suggested by otherwise unexplainable variations in the incidence of the disease among equivalently vaccinated groups. The available evidence as to the nature of both the vaccine born agent and the second factor does not permit the drawing of conclusions. Immunologic evidence exists for believing that the 17D virus itself was not related to the icterus. Some of the evidence, although far from conclusive, is compatible with the conclusions drawn by Findlay and his associates, namely that the responsible agent was a contaminating virus which gained entrance to the vaccine virus chain by way of human serum and persisted through an indefinite series of tissue-culture passages as a strain contaminant. The nature of the second factor is even more obscure, although the evidence is perhaps strongest that it is related to alimentation either on a deficiency or on a chronic intoxication basis. Clinical and pathologic findings have revealed a disease process which fundamentally involves injury to the hepatic parenchyma and which produces in fatal cases hepatic lesions similar to those seen in acute or subacute yellow atrophy. Although the disease is clinically indistinguishable from the group of cases classified as "catarrhal jaundice" or "infectious" or "epidemic hepatitis," it differs from the latter group in its unusually long incubation period and in its predilection for adults. Among the precautions adopted for the future production of vaccine, the most important are the obtaining of an uncontaminated strain of 17D virus and the complete elimination of the use of human serum.

American J. Obstetrics and Gynecology, St. Louis

44:367-552 (Sept.) 1942. **Partial Index**

*Pulse and Respiratory Rates During Labor as Guide to Onset of Cardiac Failure in Women with Rheumatic Heart Disease. C. L. Mendelson and H. E. B. Pardee, New York.—p. 370.
Transplantation of Fascia for Relief of Urinary Stress Incontinence. A. H. Aldridge, New York.—p. 398.
*Does Antenatal Use of Vitamin K Prevent Hemorrhage in the Newborn Infant? J. Parks and L. K. Sweet, Washington, D. C.—p. 432.
*Pregnandiol Determinations in Gynecology and Obstetrics. E. C. Hamblen, W. K. Cuyler and Margaret Baptist, Durham, N. C. —p. 442.
Use of Sulfanilamide Powder in Gynecologic and Obstetric Operations. J. D. Bibb, New York.—p. 464.
Use and Potency of Synthetic Estrogens. J. P. Greenhill, Chicago. —p. 475.
*Urinary Infection in Pregnancy Due to Flexner Dysenteriae. A. W. Diddle and A. P. McKee, Iowa City.—p. 481.
The Elderly Primigravida. P. B. Wahrsinger and J. I. Kushner, New York.—p. 505.
Incidence of Placenta Previa During a Ten Year Period at Cleveland Maternity Hospital (1931-1940). J. L. Reycraft and C. P. Platz, Cleveland.—p. 509.
Pregnancy Following Operation for Congenital Absence of Vagina. W. S. Whittemore, Cambridge, Mass.—p. 516.

Pulse and Respiration During Labor in Women with Rheumatic Heart Disease.—As in few normal pregnant women the pulse rate exceeded 110 and the respirations 24 in the first stage of labor, Mendelson and Pardee chose these rates

to determine whether in 200 women with rheumatic heart disease these rates differed in any way so as to give a warning of the approach of serious cardiac insufficiency. None of the women had medical complications apart from the cardiac condition, such as unexplained fever, thyroid disease or anemia. Only 1 woman was delivered by cesarean section, while 199 were delivered by the vaginal route. Intrapartum or postpartum cardiac failure occurred in 6, none of whom had ever previously been decompensated. The maternal mortality was zero. Elevation of the pulse rate above 110 and the respiratory rate above 24 or an elevation of the pulse rate alone during the first stage of labor preceded each instance of cardiac failure by sufficient time to afford a warning of its approach. Five of the 6 occurred among 10 patients with such elevations and 1 among 7 whose pulse rate only was elevated. Cardiac failure did not develop in any of the 12 patients whose respiratory rate only was elevated. Cardiac failure did not occur in patients with both pulse and respirations below these critical levels regardless of the severity of the cardiac condition. During the second stage of labor 7.5 per cent of the patients had both pulse and respirations above these critical levels, 6.5 per cent the pulse alone and 15 per cent the respirations alone. No serious significance could be attached to these rises unless they were preceded by similar rises during the first stage of labor. A similar percentage of normal women have shown these types of pulse and respiratory reaction during the second stage of labor. Proper management of the cardiac status may avoid severe cardiac failure even when the first stage of labor is unusally prolonged. The successful management of these patients during and after labor depends on careful antepartum care and cardiac functional evaluation, adequate antepartum digitalization and elimination of the second stage of labor in class 3 patients (New York Heart Association classification), and rapid adequate digitalization and elimination of the second stage of labor in any patient whose pulse and respiration exceed the levels considered as a warning of the approach of serious cardiac insufficiency.

Menadione for Prevention of Hemorrhage in Newborn.—A controlled study of menadione given during labor to prevent hemorrhage in newborn infants was instituted by Parks and Sweet in a group of indigent mothers. Patients admitted to the George Washington University obstetric service were given a single dose of 5 mg. of menadione by mouth immediately after admission to the ward, while those admitted to the Georgetown University service were used as controls. The infants of the treated mothers and of the controls were observed during their hospitalization for gross abnormal hemorrhage. Abnormal bleeding occurred in 22 of 1,594 infants whose mothers received no menadione and in 20 of 1,151 infants whose mothers did receive the vitamin. It was effective in raising the blood prothrombin levels of both the mothers and the infants. If an elevated blood prothrombin level is a significant factor in preventing neonatal hemorrhage, the authors are unable to explain the results of their survey.

Pregnandiol Determinations in Gynecology and Obstetrics.—Hamblen and his co-workers tried to determine the clinical value of Venning's gravimetric method for determining urinary pregnandiol. To this end 7,114 twenty-four hour specimens of urine from 233 women were quantified for pregnandiol. A detailed summary of the pertinent data of 90 gynecologic and 12 obstetric patients is given. It was found that 21 of 49 patients whose episodes of bleeding occurred from progestational endometriums excreted no pregnandiol and that 10 of 16 patients whose episodes of bleeding occurred from estrogenic bleeding excreted pregnandiol in amounts of the same order as those excreting it in association with progestational bleeding. This obviously indicates that no reasonable prediction as to the nature of the endometrial response at the end of an ovarian cycle can be made from data on the urinary excretion of pregnandiol during that cycle. More consistent data were secured on 25 patients with no bleeding cycles; 7 with delayed menarche and 6 past the menopause excreted no pregnandiol, and 3 of 12 with intercurrent amenorrhea excreted pregnandiol. The clinical records of the last patients suggest the likelihood that they had cyclic ovarian functions. There were no consistent relationships between the curve of pregnandiol excretion and the predicated luteal phase of the cycle or between the degree of progestational proliferation of the endometrium and the amount of pregnandiol excreted. The data of the 12 obstetric patients were reasonably consistent. All excreted pregnandiol. The 4 patients whose pregnancies progressed to term despite a history of threatened or recurrent abortion excreted normal amounts of pregnandiol. In 7 of the 8 who aborted and miscarried the pregnandiol excretions were either initially and continuously low or became decreased with some daily values dropping to zero seven to ten days before the termination of pregnancy. Since these accidents occurred despite intensive progesterone therapy, the data on pregnandiol excretion were of no clinical value in gaging dosage levels. The authors conclude that Venning's method is unreliable as a diagnostic aid in gynecology and that the data it supplies permit of no effective therapeutic endeavors.

Urinary Infection in Pregnancy.—Diddle and McKee report 4 instances of Bacterium flexneri as the causative organism in pyelitis or cystitis of pregnancy. Four similar cases have been described in the literature. The 4 present cases were encountered between January 1939 and March 1942 among 5,504 obstetric admissions. Seven of the total 8 patients showed the initial symptoms before parturition and 1 after; 2 had pyelonephritis, 2 cystitis and 4 pyelitis. Two patients had recrudescences. The infection responded to the usual measures employed for cystitis or pyelitis. The incidence of 1 in 18 obstetric urinary tract infections attributed to the Flexner organism suggests that this infection is more common than generally believed. Previous gastrointestinal disease was not present. The organism may be confused with the paracolon group, and differentiation and identification require thorough cultural and serologic study.

American Journal of Ophthalmology, Cincinnati

25:1029-1152 (Sept.) 1942

Quantitative Study of Cells and Fibers in Nucleus: Nerve Complexes of Fourth and Sixth Cranial Nerves. R. D. Harley, Rochester, Minn.—p. 1029.

Corneal Permeability: I. Factors Affecting Penetration of Drugs into Cornea. K. C. Swan and N. G. White, Iowa City.—p. 1043.

*Epidemic Keratoconjunctivitis: Superficial Punctate Keratitis, Keratitis Subepithelialis, Keratitis Maculosa, Keratitis Nummularis; Review of Literature and Report of 125 Cases. M. J. Hogan and J. W. Crawford, San Francisco.—p. 1059.

New and Improved Technic for Closure of Cataract Incisions. C. H. DeVaul, Oakland, Calif.—p. 1079.

Visual Problems: Certain Assumptions and Data. W. T. Hunt Jr. and E. A. Betts, State College, Pa.—p. 1084.

Changes in Ciliary Body After Contusio Bulbi in Which Only the Anterior Segment of Eye Is Affected. G. L. Kilgore, San Diego, Calif.—p. 1095.

Acute Follicular Conjunctivitis Resembling Beal's Type. M. P. Koke, San Diego, Calif.—p. 1100.

Epidemic Keratoconjunctivitis.—Hogan and Crawford discuss the clinical aspects of the acute inflammatory eye disease that appeared around San Francisco in September 1941 and increased in number until January 1942, after which it decreased. They term the condition epidemic keratoconjunctivitis, as it describes an acute condition typified by edema of the lids and conjunctiva, followed by intense hyperemia and little discharge. The keratotic spots 0.5 to 1.5 mm. in diameter develop within five to eight days. They lie in the superficial substantia propria, beneath Bowman's membrane, and last for two months to two years. In all, the authors treated more than 200 patients, but they base their report on the 125 who were seen and examined throughout the course of the disease. The disease has been described as keratitis nummularis (Dimmer) and keratitis disciformis associated with superficial macular lesions. Its appearance and history suggest a relationship to Béal's form of conjunctivitis. The clinical picture varies greatly, even during epidemics; 75 per cent of the conjunctival infections are unilateral. Early the glassy edema of the conjunctiva is diagnostic, as are also involvement of the regional lymph apparatus, the lymphocytic type of conjunctival exudate, tiny petechial hemorrhages, pseudomembrane formation and the meager discharge. The severe conjunctivitis may or may not be followed by keratitis. It does occur in about 75 per cent, though this figure varies in different epidemics. At times keratitis may occur without a preceding history of conjunctivitis. The disease is

most likely caused by a virus, probably of the herpes facialis group. The disease is not highly infectious, it is transmitted by direct contact to susceptible persons, individual susceptibility varies, the disease is self limited and the ultimate prognosis of vision is good.

American Journal of Pathology, Ann Arbor, Mich.

18:783-968 (Sept.) 1942

*Goormaghtigh Cells in Normal and Diseased Human Kidney: Their Possible Relationship to Renal Hypertension. W. Kaufmann, Albany, N. Y.—p. 783.
Intranuclear Inclusions in Infancy. T. D. Kinney, Boston.—p. 799.
Pathologic Changes in Listerella Infection, Particularly of Eye. L. A. Julianelle and Elizabeth Moore, St. Louis.—p. 813.
Chorioallantoic Membrane of Chick Embryos and Its Response to Inoculation with Some Mycobacteria. M. Moore, St. Louis.—p. 827.
Senile Involution of Thyroid Gland. W. Andrew and Nancy V. Andrew, Dallas, Texas.—p. 849.
Peripheral Nerves in Chronic Atrophic Arthritis. H. A. Freund, Detroit; G. Steiner; B. Leichtentritt, Eloise, Mich., and A. E. Price, Detroit.—p. 865.
Experimental Studies in Cardiovascular Pathology: V. Effects of Intravenous Injections of Solutions of Gum Arabic, Egg Albumin and Gelatin on Blood and Organs of Dogs and Rabbits. W. C. Hueper, New York.—p. 895.
Spontaneous Cerebellar Hemorrhage: Report of Fifteen Cases. N. Mitchell and A. Angrist, Jamaica, N. Y.—p. 935.
Anlagen and Rest Tumors of Lung Inclusive of "Mixed Tumors" (Womack and Graham). W. H. Harris and H. J. Schattenberg, New Orleans.—p. 955.

Goormaghtigh Cells in Human Kidney.—Kaufmann studied the cell groups at the vascular pole of the glomerulus in 400 kidneys removed at operation or at necropsy from patients with and without hypertension. He found Goormaghtigh cells regularly at the vascular pole of the glomeruli situated in the outer part of the cortex. They appeared to be intrinsic parts of the human kidney and were situated close to the macula densa of the distal convoluted tubules. They also occurred in and along the wall of the afferent arteriole, the efferent arteriole, the interlobular artery and the terminal artery. Their location and cytologic characteristics suggest to the author that they are probably transformed smooth muscle cells of the vascular media. Although their close relationship to the macula densa suggests that they provide an opening and closing mechanism for blood flow to the glomerular tuft, his data and recent work on experimental hypertension of renal origin cast considerable doubt on this theory and strongly suggest the possible endocrine character of the Goormaghtigh cells.

American Journal of Physiology, Baltimore

137:247-472 (Sept.) 1942. **Partial Index**

Influence of Hemorrhage on Skeletal Muscle Tone. W. F. Kiely, S. L. Hamilton and E. Gellhorn, Chicago.—p. 251.
Effect of Lowered Oxygen Tension of Inspired Air on Respiratory Response of Normal Subjects to Carbon Dioxide. N. W. Shock, Berkeley, Calif., and M. H. Soley, San Francisco.—p. 256.
Studies on Mechanisms Involved in Shock. E. Mylon, M. C. Winternitz, R. Katzenstein and G. J. de Sütö-Nagy, New Haven, Conn.—p. 280.
Some Physiologic Responses of Women and Men to Moderate and Strenuous Exercise: Comparative Study. Eleanor Metheny, Norfolk, Mass.; L. Brouha, R. E. Johnson and W. H. Forbes, Cambridge, Mass., with technical assistance of F. Consolazio and W. Holmes.—p. 318.
Metabolic Effects of Potassium, Temperature, Methylene Blue and Paraphenylenediamine on Infant and Adult Brain. H. E. Himwich, A. O. Bernstein, J. F. Fazekas, H. C. Herrlich and Edith Rich, Albany, N. Y.—p. 327.
Effects of Testosterone Propionate on Renal Function in Dog, as Measured by Creatinine and Diodrast Clearance and Diodrast TM. C. A. Welsh, A. Rosenthal, M. T. Duncan and H. C. Taylor Jr., New York.—p. 338.
Factors Which Influence Activity of Purified Thrombin. W. H. Seegers and H. P. Smith, Iowa City.—p. 348.
Study on Blood Volume of Group of Untrained Normal Dogs. D. D. Bonnycastle and R. A. Cleghorn, Toronto, Canada.—p. 380.
Distribution of Water and Electrolytes Between Blood, Fluids and Skeletal Muscle in Pregnant Dogs. Alice Childs and Lillian Eichelberger, Chicago.—p. 384.
Carotid Sinus Reflexes and Convulsions. E. Gellhorn, L. Yesinick, M. Kessler and H. Hailman, Chicago.—p. 396.
Significance of Carotid Sinus Reflexes for Effects of Anoxia and Carbon Dioxide on Convulsions. E. Gellhorn and L. Yesinick, Chicago.—p. 404.
Effect of Peptone on Capillary Permeability and Its Neutralization by Adrenal Cortical Extract. I. H. Shleser and S. C. Freed, Chicago.—p. 426.
Potential Changes in Injured Cardiac Muscle. M. Calabresi and A. J. Geiger, New Haven, Conn.—p. 440.
Determination of True Cell Volume by Dye Dilution, by Protein Dilution and with Radioactive Iron: Error of Centrifuge Hematocrit. M. A. Chapin and J. F. Ross, Boston.—p. 447.

American Journal of Public Health, New York

32:947-1088 (Sept.) 1942

Epidemiologic Observations in Halifax Epidemic. S. M. Wheeler, Boston, and A. R. Morton, Halifax, N. S., Canada.—p. 947.
Need of More Adequate Public Health Programs in Several States. H. S. Mustard, New York.—p. 957.
Wartime Public Health in Alaska. C. Smith, San Francisco.—p. 965.
Modern Public Opinion Poll: Means of Defining and Appraising Community Health Education Problems. P. D. Guernsey, Washington, D. C.—p. 973.
Effect of Hibernation on Content of Coliform Bacteria in Oysters. J. Gibbard, A. G. Campbell, A. W. H. Needler and J. C. Medcof, Ottawa, Ont., Canada.—p. 979.
Epidemiology of Pneumonia: Role of Type 14 Pneumococci in Producing Illness. W. G. Smillie and Olga F. Jewett, New York.—p. 987.
Working for Better Nutrition in a Rural Community. W. R. Willard, Hagerstown, Md.—p. 996.
Housing as a Health Officer's Opportunity. H. Williams, Baltimore.—p. 1001.
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Thiamine Content of Milk in Relation to Vitamin B_1 Requirement of Infants. Elizabeth M. Knott, Chicago.—p. 1013.
Present Status of Research in Cancer. C. Voegtlin, Bethesda, Md.—p. 1018.
Education in Nutrition as Part of Maternal Health Program. Christine A. Heller, Ithaca, N. Y.—p. 1021.
Stabilization of Chlorine in Water. J. E. Miller, Lansing, Mich.; W. L. Mallmann and E. D. Devereux, East Lansing, Mich.—p. 1025.
Decomposition of Land Fills. R. Eliassen, New York.—p. 1029.

American Journal of Surgery, New York

57:387-566 (Sept.) 1942

*Management of Major Compound Fractures of Skull Vault. J. T. B. Carmody, Worcester, Mass.—p. 389.
*System for Management of Acute Head Injuries: Based on 1,000 Personal Cases. M. A. Glaser, Los Angeles.—p. 406.
Postoperative Thrombosis and Embolism. G. Murray and R. MacKenzie, Toronto, Canada.—p. 414.
Diagnosis of Acute Conditions Within Abdomen in Presence of Diabetes. J. D. White and L. K. Stalker, Rochester, N. Y.—p. 429.
Early Diagnosis and Surgical Treatment of Actinomycosis of Head and Neck. O. S. Randall, Watertown, S. D.—p. 433.
Prolapse of Rectum: Suggested Operative Procedure for Cure. I. Cohn, New Orleans.—p. 444.
Acute Spinal Cord Compression Following Hemorrhage Within Extradural Neoplasm: Report of Two Cases with Recovery. A. Kaplan, Portsmouth, Va.—p. 450
*New Sign to Differentiate Abdominal Muscular Rigidity in Cases of Acute Abdominal Conditions from That of Other Causes. A. Yodice, Buenos Aires, Argentina.—p. 457.
Continuous Caudal Anesthesia in Obstetrics. W. B. Edwards and R. A. Hingson, Stapleton, Staten Island, N. Y.—p. 459.
Conservative Operations on Uterus. Irene A. Koeneke, Halstead, Kan.—p. 465.
Acute Nonspecific Mesenteric Lymphadenitis. J. H. Tilley, Lebanon, Tenn.—p. 472.
Atypical Features in Manifestations of Acutely Inflamed, Nonruptured Appendix. C. E. Gardner Jr. and C. J. Sapp, Durham, N. C.—p. 477.
Torsion of Testicle: Report of Cases. M. Wolf, New Orleans.—p. 483.
*Ultraviolet Blood Irradiation Therapy (Knott Technic) in Acute Pyogenic Infections. G. Miley, Philadelphia.—p. 493.
Embolism of Peripheral Arteries: Report of Six Cases. A. M. Dickinson, Albany, N. Y.—p. 508.
Hashimoto's Disease (Struma Lymphomatosa). E. C. Moore and O. D. Lloyd, Los Angeles.—p. 513.
Value of Varying Position of McBurney Incision. H. D. Cogswell, Whiting, Ind.—p. 517.
Locating Acute Appendicitis Prior to Surgery. K. E. Voldeng, Wellington, Kan.—p. 519.
Costoiliac Block in Balanced Anesthesia for Appendectomy in the Small Hospital. C. H. Smith, Bradford, Pa.—p. 521.
Scalenus Anticus Syndrome: Faulty Diagnosis in Presence of Horner's Syndrome—Modified Technic of Infiltration. B. Judovich and W. Bates, Philadelphia.—p. 523.

Major Compound Fractures of Skull Vault.—Among 1,411 hospital admissions for head injuries Carmody found 42 with compound fractures of the skull vault. The method and extent of treatment depend on the degree of involvement. Fundamentally, the technic is total surgical débridement of the injured tissues. The decision as to when to operate is most important. After twenty-four hours, infection increases no matter how adequate the surgical procedure. These severely injured patients stand transportation much better preoperatively than postoperatively, especially when shock has been combated. Management consists of the preparatory, preoperative, operative and postoperative stages. If the distance to a properly equipped base or hospital is short the patient should be transported there immediately, but if it is great and his condition is such that the time spent in transit may be hazardous he should be brought to the nearest available point at which preliminary supportive procedures may be carried out and he can be prepared for surgical intervention. Patients with severe irreparable injuries will

usually have a progressively downward trend and will die within a few hours. If such a patient in a preliminary station has shown no improvement, there is little point in removing him to a more fully equipped base. The exceptions are acute hematomas. The greater percentage of the nonoperative deaths occur within twelve hours. The preoperative phase, during which the patient's general condition has shown improvement, consists in the actual preparation for surgical intervention: removal of clothing, general examination and a comprehension of the patient's neurologic status. Tetanus antitoxin and chemotherapy should be given. A general anesthetic is avoided whenever possible and, as most of the patients are unconscious, is not needed. When local anesthesia must be used, procaine hydrochloride is best, especially for conscious patients who will cooperate. For mentally clouded patients when a general anesthestic must be used finally, drop ether is best and time is saved by using it from the beginning. The operative stage is governed by the extent, position and condition of the fracture. The author treated his patients without irrigating the wound. The wound is closed without drainage. The ears must be protected against the mastoid processes, as compression from bandages against these bony prominences may cause sloughing of soft tissue. Supportive measures depend on the systemic need. The patient's postoperative course will depend on the prevention or control of immediate complications: intracranial pressure is controlled by lumbar puncture, intravenous hypertonic solutions and fluids; lateralizing signs warrant further intervention and good nursing care for restlessness. Chemotherapy should assume a supporting capacity to the surgical technic. An immediate continued postoperative rise in temperature is the gravest single prognostic sign. The first five postoperative days constitute the critical period, after which the prognosis for life is usually favorable. This considers only the effect of cerebral damage and not the development of some other complication. If convalescence was uneventful and unconsciousness no more than four days, most patients may be out of bed in two weeks. Before discharge, roentgenograms must be taken to determine whether all foreign material was removed and whether any later operation is indicated. Various types of fixed metal plates covering the bony defect have been recommended, but best results follow direct bone grafting. In children regeneration may sometimes occur. A head support made of light plastic material to cover the involved area has been used with good results. Children should wear such a support for one year, and if no regeneration occurs bone grafting should be contemplated. Other postoperative symptoms will depend on the neurologic status. Of the author's 42 patients 19 were not operated on; only 1 survived for three days and 1 for six days. There were 3 postoperative deaths among the 23 operated on. Of the 20 who survived, severe acute complications occurred in 3; 2 had hematomas and 1 an infection.

Acute Head Injuries.—Glaser states that a classification based on the variations of intracranial pressure is of more value in the proper treatment and progress of patients with head injuries than classification based on skull fracture or pathologic considerations. Acute hemorrhage of sufficient magnitude to be fatal will always cause a high intracranial pressure sometime before death. The pressure if taken before the hemorrhage has become sufficient to increase it will naturally be low. If it is taken when the patient is at the point of death it may also be low. This does not apply to subacute and chronic subdural hematomas, in which instances the hemorrhage is actually slow enough to compress the brain without increasing the cerebral volume within the intracranial cavity. The intracranial pressure in such instances may be either high or low. If a high intracranial pressure is reduced following spinal drainage, yet returns to higher limits on repeated taps, the diagnosis of hemorrhage is likely. Such changes in spinal pressure call for an exploration. If doubt exists, surgery is advisable. Lumbar puncture is without danger if the fluid is removed slowly and the original pressure is reduced only by half. It is invaluable for proper evaluation and interpretation. The localization of a hemorrhage by clinical signs alone is frequently impossible, as it may be bilateral or combined with multiple cerebral damage. In such instances the pineal shift, the electroencephalograph, pneumoencephalogram or multiple burr openings are diagnostic aids. In acute cases the pneumoencephalogram is contraindicated.

Abdominal Muscular Rigidity.—Yodice describes a maneuver which serves to establish the differential diagnosis between muscular contraction from peritoneal reactions and those from other causes. The patient is placed in the dorsal decubital position with the thighs abducted and flexed to 90 degrees and the feet resting on the bed or the examining table. The index and middle fingers are introduced into the rectum when with the left hand the abdomen is palpated at the site of the muscular contraction. If at the moment at which the anal sphincter is dilated the muscular contraction of the abdomen does not disappear, it denotes that the muscular contraction is due to peritoneal irritation (peritonitis), but if the contraction disappears it signifies that the contraction is due to pain of a colicky type for which an emergency surgical procedure is not required. The maneuver may be repeated and it establishes the differential diagnosis between muscular contraction of the abdomen due to peritoneal infection and a colicky type of pain, contraction of nervous origin and of "phantom" tumor produced by contraction of the abdominal wall or intestine and of true tumor resulting from a neoplasm. When a phantom tumor is present the contraction disappears during the dilation of the anal sphincter. Valuable information is also obtained by test in cases of retroperitoneal tumor, aortitis or aneurysm of the abdominal aorta, which at times cause a muscular contraction of the abdominal wall. In aortic aneurysm the pulsation becomes less definite and the muscular contraction disappears at the moment the anal sphincter is dilated. The tumor diminishes in size.

Ultraviolet Blood Irradiation.—During the last three years Miley has used ultraviolet to irradiate the blood of 151 consecutive unselected patients with acute pyogenic infection. The Knott technic, which withdraws, citrates, irradiates and returns it intravenously to the patient, was employed. Most of the 151 patients received no chemotherapy before or after irradiation; a few were admittedly chemotherapeutic failures. The results show that 100 per cent of the patients with early lesions, 98 per cent with moderately advanced lesions and 42 per cent who were apparently moribund recovered. All the invading bacterial organisms disappeared except those in cases of Staphylococcus aureus septicemia and acute or subacute bacterial endocarditis. The detoxification effect was most striking. Twelve to seventy-two hours following therapy nausea, vomiting, delirium, fever, general malaise, rapid pulse and rapid respiration subside. Abnormally high temperature falls by lysis or crisis. Grossly discernible peripheral vasodilatation occurred within five to ten minutes after the irradiated blood was returned to the venous circulation in more than 75 per cent of all patients. This persisted in some for more than thirty days. Ultraviolet irradiation of the blood can safely follow the administration of sulfonamide derivatives, quinine and iodides, but sulfanilamide, sulfapyridine and iodides cannot be given within the first five days after irradiation without risking a probable photosensitive reaction. The convalescence of patients given only blood irradiation is much shorter than of those who also receive sulfonamides. Such irradiation increases the uptake of oxygen. General resistance is obviously increased. As yet, in no instance of acute pyogenic infection uncomplicated by septicemia did the infection progress to septicemia after ultraviolet blood irradiation was employed.

Maine Medical Association Journal, Portland

33:197-220 (Sept.) 1942

Subluxation of Distal End of Ulna. C. W. Ruhlin, Bangor.—p. 197.
Medicine and Air Supremacy. J. F. Fulton, New Haven, Conn. —p. 201.

Medical Annals of District of Columbia, Washington

9:331-374 (Sept.) 1942

Aspects of Chemical Control of Carcinoma of Prostate. W. P. Herbst, Washington.—p. 331.
Postoperative Pulmonary Complications: Survey of Three Year Period (1937-1940) at Garfield Memorial Hospital. S. T. Moore, Santa Ana, Calif.—p. 336.
Bilateral Dermoid Cysts Complicating Pregnancy: Report of Case. G. J. Ellis, Washington.—p. 342.
Barbituric Acid Poisoning: Report of Unusual Case. T. D. Noble, Rockville, Md.—p. 345.
Intussusception Produced by Submucous Intestinal Lipomas: Report of Case. J. P. Shearer and J. R. Creer, Washington.—p. 347.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian and New Zealand J. Surgery, Sydney

12:1-88 (July) 1942

*Carbuncle of Kidney: Report of Three Cases and Review of Literature. R. N. Howard.—p. 3.

Experiences in Thoracic Surgery in Base Hospital in the Middle East. E. S. J. King.—p. 22.

Treatment of Burns. W. A. Hailes.—p. 30.

Local Use of Sulfonamide Compounds. T. E. Wilson.—p. 34.

Infective Complications of Head Battle Casualties. D. Miller.—p. 53.

Excision and Primary Suture of Wounds in War Surgery. W. A. Hailes.—p. 64.

Carbuncle of Kidney.—Howard reports 3 cases of carbuncle of the kidney. The infecting organism was Staphylococcus aureus, whose origin was some cutaneous lesion, such as a boil or carbuncle. Its route of transference is undoubtedly the blood stream; that is, there must at least be a transient bacteremia. The primary lesion is undoubtedly an arterial or capillary embolus, following which an infarct forms, the fate of which will depend on its size, its situation relative to the kidney capsule and the reaction excited by it in the surrounding renal tissue. Spread by progressive venous thrombosis and production by the organism of a powerful necrotizing exotoxin in a subject of low resistance would produce a large necrotic area before localization would occur, and a few scattered areas of suppuration in the necrotic area would complete the picture of a classic "carbuncle of the kidney." In a subject of greater resistance, spread from the primary embolus will be checked more rapidly and leukocytic activity will probably be greater. Liquefaction of the necrotic area will occur and a unilocular abscess of variable size by confluence of the suppurating areas may result. Multiple bacterial emboli in such a person will produce multiple cortical abscesses. A history of the primary focus is frequently obtainable. The first renal symptoms may occur from two days to many months later; the usual limits are two weeks to two months. The onset is generally sudden or ingravescent with sharp and stabbing pain in the loin (occasionally the abdomen) and rigor. Diagnosis involves a full consideration of the site of the lesion, the nature of the lesion and the extent of renal damage. Renal conditions to be excluded are "primary" bacillary pyelonephritis, pyonephrosis, infected hydronephrosis, renal tuberculosis and renal neoplasm. The mortality for the 84 cases reported in the literature (including the author's 3 cases) was 21 per cent. The factors which appear to influence the prognosis are age, sex and the state of the blood. The extremes of life, especially in males, appear to be unfavorable periods. Of the patients who died as many as 5 had grossly defective hemoglobin values. Flagrant pyemia naturally carries a grave prognosis, while involvement of both kidneys indicates a probable fatal termination. Nonoperative treatment has not been advocated, despite the possibility of spontaneous cure, and the author suggests that it is justifiable to temporize if the symptoms are mild in the hope of such an occurrence. In most cases surgical intervention will be necessary. In all smaller carbuncles the kidney should be saved if possible, while nephrectomy is indicated for large lesions. Gravely ill patients with a perinephric abscess should have the abscess drained at the primary operation, and when their general condition is improved the carbuncle should be attacked directly.

British Journal of Radiology, London

15:243-272 (Sept.) 1942

Geiger-Muller Counters: Part II. J. D. Craggs and J. F. Smee.—p. 243.

Further Data About Circulation and About Cardiovascular System Before and Just After Birth. A. E. Barclay, K. J. Franklin and M. M. L. Prichard.—p. 249.

Comparison of Action of X and Gamma Radiation on Fibroblasts. Edith Paterson.—p. 257.

Use of a Bore Hole in Conjunction with a Radon Plant. W. J. Meredith.—p. 264.

Compression Technic in Intravenous Urography: Survey of 100 Cases. J. A. G. F. Rose.—p. 266.

Degenerate Enchondroma of Femur and Tibia. F. Stabler.—p. 269.

British Medical Journal, London

2:149-178 (Aug. 8) 1942

Sphincter Mechanism of Lower End of Bile Duct. G. Gordon-Taylor.—p. 149.

*Enteritis in a Nursery Home Associated with Giardia Lamblia. G. Ormiston, Joan Taylor and G. S. Wilson.—p. 151.

Tietze's Disease: Nonsuppurative Nonspecific Swellings of Rib Cartilage. A. M. Gill, R. A. Jones and L. Pollak.—p. 155.

Chemical Luminescence Test for Blood: Forensic and Clinical Applications. J. McGrath.—p. 156.

Cardiac Massage: Experimental Study. G. A. Pollock.—p. 157.

2:179-208 (Aug. 15) 1942

Role of Renin in Experimental Hypertension. B. A. Houssay and E. Braun-Menendez.—p. 179.

Disinfectant Action of Phenol and of Alcohol in T. A. B. C. Vaccine. J. C. Cruickshank, Betty C. Hobbs, A. M. McFarlan and Irene Maier.—p. 182.

Maternity Service Scheme. Louise McIlroy.—p. 184.

Hyperostosis Frontalis Interna. C. T. Andrews.—p. 185.

Acute Laryngitis and Septicemia Due to Hemophilus Influenzae (Type B). S. de Navasquez.—p. 187.

Atypical Asphyxial Deaths. N. Patterson.—p. 188.

Enteritis Associated with Giardia Lamblia.—An account of a protracted outbreak of enteritis due to Giardia lamblia affecting children and adults in an evacuee nursery home is reported by Ormiston and his associates. They believe the condition to be more common than is generally supposed. G. lamblia was found in 71 per cent of children and adults having loose stools at the time of examination and in only 32 per cent of those with normal stools. The organism was found in 82 per cent of children and adults with a history of intermittent or continual loose stools and in only 25 per cent of those without such a history. The infection was successfully cured in five days by atabrine dihydrochloride. The symptoms—chronic diarrhea and some anemia in the children, and diarrhea with giddiness, loss of energy, anorexia, headache and epigastric discomfort in the adults—disappeared after treatment. The general nutrition of the children improved. Further observations are necessary to establish the exact degree of pathogenicity of Giardia for man.

Edinburgh Medical Journal

49:401-464 (July) 1942

Macrodiagnosis and Microdiagnosis of Cancer: Laboratory Survey of Routine Mammary Lesions. E. K. Dawson and W. F. Harvey.—p. 401.

Surgical Lesions of Spinal Cord and Nerve Roots. G. L. Alexander.—p. 409.

Biochemical Control of Cancer. M. Copisarow.—p. 425.

Some Recent Advances in Chemotherapy. W. O. Kermack.—p. 429.

49:465-528 (Aug.) 1942

Determination of Blood Volume in Man with Evans Blue ("T-1824"). L. J. Davis.—p. 465.

Delinquency. D. Kerr.—p. 484.

Auricular Flutter with 1:1 Auriculoventricular Response. R. A. Miller.—p. 496.

Tuberculosis and Derangement of Suprarenal Function. W. T. Munro, J. O. Westwater and D. C. Ross.—p. 508.

Journal of Pathology and Bacteriology, Edinburgh

54:289-406 (July) 1942

Experimental Study on Placental Permeability to Cirrhogenic Poisons. A. E. Sundareson.—p. 289.

Histoplasmosis: Report of Case. F. W. Simson and J. Barnetson.—p. 299.

Isolation of Bacillus Anthracis from Industrial Material, with Special Reference to Resistance of Spores to Heat. E. R. Jones.—p. 307.

Aneurysm of Pulmonary Artery and Fibrosis of Lungs Due to Syphilis. S. De Navasquez.—p. 315.

Early Tumor Formation in Pure Line Mice Treated with Carcinogenic Compounds and Associated Blood and Tissue Changes. L. Dorothy Parsons.—p. 321.

Observations on Preparation and Testing of Antigenic Fractions from Bacterium Typhosum. J. Ungar, R. M. Jenner and R. F. Hunwicke.—p. 331.

Chronic Inflammation Due to Implanted Collagen. B. D. Pullinger and A. Pirie.—p. 341.

Isolation of Bacterium Paratyphosum B from Feces. K. E. Cooper, N. Wood, E. Elliot, M. Caswell and W. Small.—p. 345.

Influence of Vitamin B Deficiency on Experimental Liver Necrosis. R. M. Calder.—p. 355.

Schweizerische medizinische Wochenschrift, Basel

72:405-428 (April 11) 1942. **Partial Index**

Hyperemesis in Infancy. E. Freudenberg.—p. 405.
Diagnostic Evaluation of Increased Intracranial Pressure. R. Bing.—p. 407.
*Hemorrhagic Purpura in Exophthalmic Goiter. G. Bickel and S. Dicker.—p. 411.
Diapedesis and Inflammation. P. B. Grawitz.—p. 413.
Statistics on Ventricular and Duodenal Ulcer. M. Fuchs.—p. 415.

Hemorrhagic Purpura in Exophthalmic Goiter.—Bickel and Dicker describe two instances of hemorrhagic diathesis in patients with exophthalmic goiter. There were extensive involvement of the skin and mucous membranes and recurring visceral hemorrhages. This type of hemorrhagic diathesis is observed exclusively in the grave and acute forms of hyperthyroidism and is the result of multiple factors among which secondary hepatic insufficiency is the most important. Liver insufficiency presents an obstacle to the normal utilization of vitamin K by the liver and causes severe hemorrhages analogous to those observed in yellow atrophy of the liver and in certain forms of icterus and of hepatic cirrhosis. Treatment with vitamin K effects only a relative amelioration, since there is not a real deficit but rather an impairment of its utilization by the damaged hepatic parenchyma. For this reason only the treatment of hyperthyroidism itself is likely to effect a cure of the hemorrhagic diathesis. It is probable that capillary fragility and vitamin C deficit frequently noted in these patients likewise play a part in the pathogenesis of certain simple purpuras in exophthalmic goiter, but these factors by themselves are incapable of causing the grave hemorrhagic diathesis in the pathogenesis of which hypoprothrombinemia is the essential factor.

Boletín de la Sociedad Cubana de Pediatría, Havana

14:217-264 (May) 1942. **Partial Index**

Bronchial Tuberculosis in Children: Results of Routine Bronchoscopic Examination in Children Service of "La Esperanza" Sanatorium. R. G. Mendoza, J. G. Arrazuria and R. Meneses M.—p. 217.
Tendon Transplantation in Reconstructive Therapy of Infantile Paralysis. P. Sánchez Toledo and H. Valle.—p. 238.
*Arteritis of Large Vessels as Sign of Infantile Congenital Syphilis. C. Torres-Umaña and R. Atalaya.—p. 253.

Arteritis of Large Vessels in Children.—Torres-Umaña and Atalaya observed 343 children with congenital syphilis from birth to 13 years of age. The group included children with a positive Wassermann or Kahn reaction or without a positive test but with syphilis of one or both parents. Arteritis of the aorta, the pulmonary artery, or of both, was demonstrated by physical and teleroentgenographic examination. The condition disappeared or improved with early antisyphilitic therapy. In several of the cases the condition was familial and was observed in two or three generations. The authors consider arteritis of the large vessels a sign of congenital syphilis. They advise antisyphilitic therapy even if the serologic tests are negative, provided one or both parents give a positive reaction.

Klinische Wochenschrift, Berlin

20:529-560 (May 24) 1941

Chemoprophylaxis of Gas Gangrene. H. T. Schreus.—p. 529.
*Significance of Hypotension for Angina Pectoris. Ratschow and P. Eggers.—p. 536.
*Cholesterolemia and Atherosclerosis. H. Liebig.—p. 538.
Determination of Verdohemochromogen in Blood with Photoelectric Colorimeter. R. Havemann.—p. 543.
Secondary Effects of Modern Chemotherapeutic Agents. A. Ringl.—p. 545.
Assay of Diethylstilbestrol in Castrated Women. K. Herrnberger.—p. 547.
*Anal Fistulas in Tuberculous Patients: Statistical, Clinical and Anatomicopathologic Study. V. Basunti and S. Sticotti.—p. 548.

Hypotension and Coronary Insufficiency.—According to Ratschow and Eggers, angina pectoris is the result of coronary insufficiency, the pathogenesis of which has not been fully explained as yet. The impression has been gained that blood perfusion of coronary vessels is largely dependent on the factors that regulate blood pressure and that the mean aortic pressure is by far the most important. If this is true, coronary insufficiency should be accompanied by deviations in blood pressure. The authors studied blood pressures in 46 verified cases of angina pectoris and found hypotension in nearly all of them. With reduction in the aortic pressure the blood perfusion of coronary vessels decreases. In dogs, mild deficiencies in aortic pressure involve the danger of ischemia. It is not a coronary spasm or a disproportion between dilatation of the coronary vessels and the peripheral combustion that produces myocardial ischemia but rather a deficiency in perfusion pressure. This suggests that it is not the man with hypertension who is likely to suffer from insufficiency of coronary blood perfusion but rather the person with hypotension. The authors found that stenocardia is much less frequent in hypertensive than in hypotensive patients. Schellong has demonstrated that even in hypertensive patients hypotonic regulatory disturbances are possible because perfusion disturbances may result from an inadequate blood supply even in the presence of high blood pressure. The authors believe that hypotension leads more frequently to coronary insufficiency than does hypertension. They therefore, employed measures to increase the blood pressure.

Cholesterolemia and Atherosclerosis.—Liebig made studies on 80 patients with atherosclerosis in order to throw light on the relations between cholesterolemia and atherosclerosis. He found the cholesterol content of the blood increased in 77 per cent of patients with aortic sclerosis, in 61 per cent of those with general atherosclerosis and in 87 per cent of those with nephrosclerosis, or in 75 per cent of all patients with atherosclerosis. Numerous pathologic anatomic observations and experimental research on atherosclerosis indicate the decisive importance of cholesterol for the pathogenesis of atherosclerosis. In essential hypertension the serum cholesterol content is increased in 77 per cent of the patients. The fact that the serum cholesterol content is increased in an equally high percentage of patients with atherosclerosis and with essential hypertension suggests not only that the etiologic importance of essential hypertension for the development of atherosclerosis is due to the increased load on the vascular system but that the accompanying hypercholesterolemia likewise plays an important part. The results of clinical studies and those of animal experiments speak against causal connections between blood pressure and serum cholesterol.

Anal Fistulas in Tuberculous Patients.—Basunti and Sticotti noted anal fistulas in 48 of 732 tuberculous patients (6.5 per cent). Anal fistula was discovered in only 1 of 121 patients with extrapulmonary tuberculosis (0.82 per cent); the remaining 47 fistulas were found in 611 patients with pulmonary tuberculosis, an incidence of 7.7 per cent. Observation that anal fistula is more frequent in men was corroborated by finding it in 12 per cent of men and in only 1.6 per cent of the women. Patients with severe exudative and destructive pulmonary disease are more subject to anal fistulas than patients with the productive type of the disease. The perianal abscess either precedes or concurs with a progressive or regressive modification of the pulmonary process. Patients with severe tuberculosis may exhibit multiple anal fistulas surrounded by torpid granulation tissue, extensive zones of infiltration and detachment of skin at the external openings, whereas in the fibrous type of pulmonary tuberculosis the fistulas are benign. Specimens obtained by scraping the fistulous tract of 12 patients with ulcerative pulmonary tuberculosis yielded tubercle bacilli 8 times in the biologic test and 7 times by culture. In 15 patients with fibrous type of pulmonary tuberculosis and with negative sputum positive results were less frequent in material from fistula; 7 positive results were obtained with the biologic and 2 with the culture method. Tissues surrounding anal fistula were subjected to microscopic examination in 5 cases and in 3 tuberculous tissue was definitely demonstrated; in a fourth the tuberculous nature of the tissue was suspected and in the fifth the tissue was of nontuberculous character. The anatomic and clinical observations indicate that the perianal tuberculous abscess is probably of hematogenous origin.

Book Notices

The Pharmacopœia of the United States of America (The United States Pharmacopœia). Twelfth revision (U. S. P. XII). By Authority of the United States Pharmacopœial Convention Meeting at Washington, D. C., May 14 and 15, 1940. Prepared by the Committee of Revision and Published by the Board of Trustees. Official from November 1, 1942. Fabrikoid. Price, $7.50. Pp. 880, with illustrations. Easton, Pa.: Mack Printing Company, 1942.

The twelfth revision of the U. S. P. represents the passage of more than a hundred and twenty years since the first Pharmacopeia of the United States was issued in 1820 with a preface which read in part "It is the object of a Pharmacopeia to select from among substances which possess medicinal power those the utility of which is most fully understood and to form from these preparations and compositions in which their powers may be exerted to the greatest advantage. . . . The value of a Pharmacopeia depends on the fidelity with which it conforms to the best state of medical knowledge of the day." During this period there have been many changes, additions and "deletions," but always with increasing recognition, national and international, until now the contents are revised every five years and the book is official in Costa Rica, Cuba, the Dominican Republic, Nicaragua, Panama, the Philippines and Puerto Rico as well as in the United States of America.

The twelfth revision contains one hundred and sixty new drugs and medicinal preparations, making a total of six hundred and fifty-nine medicinal products. New U. S. P. items include antimalarial drugs, antianemic preparations, diagnostic agents, heart medicaments, biologic products and closely related substances, surgical supplies, diuretics and related products, sulfonamides and other chemotherapeutic, antibacterial and antiparasitic agents, barbiturates and related drugs, antacids, hormones, ergot-like products, antisyphilitic agents, narcotics, analgesics and anesthetics, vitamins, parasympathomimetic drugs, vehicles, preservatives and miscellaneous medicinals. Thus the contents of the book are U. S. Pharmacopeial titles in English and Spanish, officers of the convention, the board of trustees, the general committee of revision, preface, the history of the United States Pharmacopeia, articles of incorporation, constitution and by-laws, abstract of the proceedings of the U. S. Pharmacopeial Convention of 1940, international protocol, articles added to the U. S. P. XII, articles added to the U. S. P. XI by means of supplements, articles official in the U. S. P. XI but not admitted to the U. S. P. XII, changes in official Latin titles, changes in official English titles, general notices, monographs on vegetable and animal drugs, chemicals and preparations, general tests, processes and apparatus, reagents, test solutions, indicators, standard solutions and hydrogen ions, tables and index. To meet the needs of the medical profession, armed forces and other interested bodies there will be issued two types of "supplements"; sheet supplements which will be issued whenever a need arises and a bound supplement which will appear midway between U. S. P. XII and U. S. P. XIII. Each purchaser of U. S. P. XII is enabled to secure his copy of the bound supplement at no extra cost by using a mailing card which is pasted inside the back cover. These supplements will aid materially the up to date considerations of the revision committee.

The present revision is a commendable one and should be in every medical library and in any other library which relates to the testing or use of medicinal preparations. It is of value to the student, teacher and researchist, whether these individuals are in academic or commercial fields. Those who are familiar with the U. S. P. need no introduction to the current edition; others, when they become acquainted with its contents, will not need a second introduction.

Text-Book of Pathology. By Sir Robert Muir, M.A., M.D., Sc.D. Fifth edition. Cloth. Price, $10. Pp. 991, with 599 illustrations. Baltimore: William Wood & Company, 1941.

The fifth edition of this textbook, written by the well known Scottish pathologist Sir Robert Muir, has been extensively revised since the preceding edition was published in 1936. The general plan is unchanged and about one fourth of the text is devoted to a discussion of general principles, while the remainder is assigned to the various fields of special pathology. However, the author has made changes in all chapters, with deletions as well as additions of new material. He has also revised the order of presentation. Thus, in the first section, the topic of the retrogressive changes has been displaced from its initial position in favor of a discussion of circulatory disturbances. The first part contains especially good sections on the subjects of inflammation and repair, and on the general reactions of the body in infectious diseases. There is also considerable new material on neoplasms. The chapters devoted to systematic pathology are excellent because of a genuine effort to correlate morphologic and functional abnormalities. Illustrative material is abundant, with about six hundred black and white illustrations. Their quality is improved, perhaps because of a change in the type of paper. Altogether, this is a well proportioned and well synthesized presentation, admirably adapted for use as a student's textbook. The major limitation to its usefulness for the medical practitioner is the lack of a bibliography. The few references given, mostly in footnotes, are to standard text and reference books.

Non-Pulmonary Tuberculosis. By Michael C. Wilkinson, M.B., B.S., M.R.C.S., Medical Superintendent, Essex County Hospital, Black Notley. With a foreword by Sir Henry Gauvain, M.D., M.Chir., F.R.C.S. Cloth. Price, 12s 6d. Pp. 174, with 12 illustrations. London. Hamish Hamilton Medical Books, 1942.

This is a good contribution to the literature on tuberculosis as it occurs in other parts of the body than the lungs. In the fifteen chapters the author discusses pathogenesis and constitutional treatment of nonpulmonary tuberculosis, followed by diagnosis, treatment and prognosis of the disease as it attacks various lymph nodes, such as those of the cervical region, the abdomen and the chest. Tuberculosis of the bones and joints is presented in the following order: spine, hip, knee, ankle and foot, wrist, hand, elbow, shoulder and sacroiliac joints. One chapter is devoted to genitourinary tuberculosis, another to abdominal tuberculosis, another to the appendix; tuberculosis and pregnancy is discussed.

Dr. Wilkinson reports largely on his own experience in the Essex County Hospital including the statistical material based on investigation and treatment of 593 patients during 1930 to 1937. He points out that the bovine type of tubercle bacillus is a common cause of tuberculosis of the cervical lymph nodes and summarizes the findings, in this respect, as being 90 per cent in Scotland, 65 per cent in England, 54 per cent in the United States and 25 per cent in Germany. Attention should be called to the fact that in the United States tuberculosis in cattle has been so much reduced in recent years that it has become a rarity for a child to be infected with the bovine type of tubercle bacillus. In England, he states that tubercle bacilli may be found in 5 to 10 per cent of the specimens of milk examined. The statement "children who suffer from tuberculous adenitis do not usually develop organic tuberculosis in later life" will be challenged by a number of tuberculosis workers, such as Miller, who says "One must remember that, while the tubercle in the lymph nodes in the neck may be conferring on the organism an added degree of resistance, they are at that same time harboring living bacilli which may be set free at any time to be carried to other parts of the body, there to grow in increased number. We must be guarded in accepting any such generalization as that tuberculous cervical adenitis may confer any practical immunity to tuberculosis elsewhere in the body. It will give rise to changed reaction and a heightened resistance, but this is probably of not enough actual potency to warrant our accepting it with complacency." While the author is of the opinion that children who become infected with the bovine type of tubercle bacillus may develop some immunity, he says "Deliberate immunization by that method must be condemned, however, owing to the disastrous effects which may follow bacillemic infection."

With reference to diagnosis, he says "A tuberculin test is most useful in the diagnosis. If it is negative the child can be regarded as nontuberculous. Many of these negative tuberculin children with dyspeptic symptoms are found to have septic tonsils, and it is possible that nonspecific ulceration in the ilium and secondary inflammatory changes in the glands may occur." Large numbers of clinicians will take exception to this statement with reference to tuberculosis of the tracheobronchial

glands: "The diagnosis can be made with certainty by radiographs in anteroposterior and lateral dimensions or by a tomograph"; since the x-ray shadow is not pathognomonic, shadows cast by various other diseases in the tracheobronchial lymph nodes have the same appearance as those produced by tuberculous lesions. Many will also question the statement that "there is evidence to suggest also that the child who develops tuberculosis of the tracheobronchial glands is unlikely to develop pulmonary tuberculosis," since they consider that all cases of clinical pulmonary tuberculosis are preceded by primary tuberculosis, which often involves the tracheobronchial lymph nodes.

Dr. Wilkinson presents in a concise and splendid manner the various forms of extrapulmonary tuberculosis. His experience leads him to believe that pregnancy does not have a deleterious effect on these forms of the disease. This book should prove of great value to all physicians and, therefore, it is highly recommended.

Intestinal Obstructions: A Physiological and Clinical Consideration with Emphasis on Therapy; Including Description of Operative Procedures. By Owen H. Wangensteen, B.A., M.D., Ph.D., Professor of Surgery of the University of Minnesota, Minneapolis. Second edition. Cloth. Price, $7. Pp. 484, with 143 illustrations. Springfield, Illinois & Baltimore: Charles C Thomas, 1942.

The addition of continuous suction through an indwelling duodenal tube to the treatment of intestinal obstruction is undoubtedly one of the most important contributions to surgery in the past decade. For this and for clarification of the entire subject of intestinal obstruction we are indebted to Dr. Wangensteen. He has not only done a great deal of fundamental research but has popularized and taught the subject to the entire medical profession.

The first edition of this book was well written and carried a message which was well received and perhaps too well learned. Undoubtedly a few patients were treated conservatively who should have had early operations for relief of strangulation obstruction. The swing of the pendulum in that direction and the swing back away from too much conservatism was a natural sequence of events. In the second edition Dr. Wangensteen discusses this reaction and attempts to secure a more even balance between operative and nonoperative forms of treatment. More space is given to surgical technic, especially newer forms of aseptic anastomoses. The use of nonsoiling surgical procedures will undoubtedly further reduce the as yet too high mortality from intestinal obstructions.

The entire book has been rewritten, enlarged and brought up to date. Much fundamental experimental work is reported and the bibliography is complete. The illustrations, charts and tables are excellent and help to clarify a text which reads easily. This is a better rounded book than the first edition. More space is devoted to such related subjects as abdominal injuries, postoperative care and fluid balance. The special obstructions are considered in greater detail. It is a book from which every doctor can learn. It gives the best over all picture of intestinal obstruction available. The book is important to the research worker, the general practitioner and the surgeon.

Authority, Observation and Experiment in Medicine. By W. W. C. Topley, M.D., F.R.C.P., F.R.S., Professor of Bacteriology and Immunology in the University of London. Linacre Lecture 1940. Paper. Price, 40 cents; 1s. 6d. Pp. 46. New York: Macmillan Company; Cambridge: University Press, 1940.

More than four hundred years have passed since Linacre founded two lectureships, one in the University of Oxford and another at St. John's College in Cambridge. These lectures continue to be given year after year and many of the lecturers have been men of great note, as is W. W. C. Topley. Much thought went into the excellent writing of this essay. For instance: If a pioneer has no immediate followers, it is because his particular discovery has been made before its time. . . . There has, indeed, been so thorough a fusion between medical science and medical practice over a large part of the common field that I do not think that any one would find it an easy matter to define clinical medicine as it exists today, except in terms of a professional activity. . . . There is no way of gaining new knowledge so effective as controlled experiment, and no substitute for it. . . . The really great scientist is always a great artist. He observes things of which lesser men are blind, sees implications that other men ignore, forms hypotheses that look like guesses but have an uncanny way of proving true, and, when he goes wrong, learns more from his mistakes than others do from their successes.

Immunochemistry. By William C. Boyd et al. Annals of the New York Academy of Sciences, Volume XLIII, Art. 2, Pages 33-121, April 30, 1942. Paper. Price, $1.25. With illustrations. New York: The Academy, 1942.

This is a pamphlet bound in paper, consisting of a series of researches presented before the Conference on Immunochemistry, Section of Physics and Chemistry, New York Academy of Science, March 28 and 29, 1941. Among the topics treated are (i) an antigenic analysis of vaccinia virus (Smadel and Shedlovsky), (ii) isolation and purification of the M-substance of group A hemolytic streptococci (Zittle and Mudd), (iii) study of three chemically distinct components of serum complement (Ecker and Pillemer), (iv) mathematical relationships between antigen and antibody in the precipitin reaction (Kendall) and (v) the antigenic properties of hemocyanin (Hooker and Boyd). Each paper is clearly and concisely presented with an adequate bibliography, making possible a rapid orientation in several of the newer phases of immunochemistry. Clinicians should be particularly interested in Smadel's "duplex" (L-S) antigen in vaccinia virus and in the suggested practical applications of Ecker's "triune" complement.

Clinical Anesthesia: A Manual of Clinical Anesthesiology. By John S. Lundy, B.A., M.D., Head of Section on Anesthesia, Mayo Clinic, Rochester, Minn. Cloth. Price, $9. Pp. 771, with 267 illustrations. Philadelphia & London: W. B. Saunders Company, 1942.

This is an indispensable reference book for the shelves of hospital libraries or for physicians who may engage in the administration of general, regional or local anesthetics. It is essentially a report based on the extensive experience of the author. The average physician engaged in or supervising ordinary anesthetic procedures would be likely to select a group of relatively simple technics for various types of anesthesia, however, and once this had been done would be unlikely to change the anesthetic method and agent at frequent intervals. It is for this reason that the reviewer feels that this book is more useful as a reference book than as a handbook which can serve as a simple guide. The latter information, which is based on the judgment and experience of the author, is available, should the reader desire to develop it from the text or the tables.

Métodos modernos de amputação. Por Edmundo Vasconcelos, catedrático de clinica cirúrgica, Faculdade de medicina da Universidade de São Paulo. Com a colaboração de Edgard Pinto de Souza e José Gonçalves Filho. Paper. Pp. 253, with 258 illustrations. São Paulo. Companhia Editora Nacional, 1942.

Even though the text of this valuable and timely volume is in Portuguese, it will prove of inestimable value to every surgeon because of the unusually well executed pen drawings which illustrate the technics involved in amputations. Chapter I deals with general methods, chapter II with general principles of amputations and chapter III with the indications for amputations. Chapter IV treats exhaustively of the technic of amputation and disarticulation of the upper extremity and chapter V gives the same complete consideration to the lower extremity. Chapter VII is a fine dissertation on prosthesis. The bibliography of four hundred and ninety-eight references is thorough and up to date. This timely and instructive volume is recommended unreservedly to students and surgeons.

Army Posts and Towns: The Baedeker of the Army. Compiled by Charles J. Sullivan. Fourth edition. Cloth. Price, $3. Pp. 199. Los Angeles: Haynes Corporation, Publishers, 1942.

Just available is the latest edition of a book which has had extensive use by those who are in the Army. It is one of the most valuable compilations of important information. It includes not only a list of all army posts and towns but, under each, information concerning transportation to the area, the nearest town, a description of the available quarters, a statement as to whether or not you may have a private car, a point or two about schools, climate and clothing to be worn, also information regarding hotels, and additional remarks of value. Supplementary information includes the army corps areas, military insignia and decorations, and the pay table.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

LEAD PIPE FOR CONNECTION BETWEEN WATER MAIN AND RESIDENCE

To the Editor:—**I have been informed by my plumber that he is not permitted to install any other than a lead pipe from the water main into my house. The distance in my case is 75 feet, and it would seem to me that there is a constant danger of lead poisoning if water used for drinking purposes is allowed to stand in this pipe. I have investigated the reason for this order and find that in the Chicago municipal code (chapter 83, paragraph 23) it is stated that only lead pipe can be used in such cases. I can see no difference in the danger between a lead pipe outside the house or inside the house. I know the latter is definitely avoided. I am informed that the city code dates back a good many years.**

F. M. Whitsell, M.D., Chicago.

[This inquiry was submitted to two authorities, whose respective replies follow.]

ANSWER.—1. Lead pipe is used in the water supply of many cities and it causes no trouble, because the amount of lead which is absorbed by most waters is negligible. Lead piping is effective in forming an insoluble coating of salts which inhibits its solution. It is only when the water supply is acid, particularly because of organic acids, that it is a potential danger. It may also dissolve when different metals are used in the plumbing, when galvanization may play a part. The question of whether serious amounts of lead are liberated may be solved by analyzing the water for its lead content. It is considered that 0.10 part per million is perfectly safe.

2. The practice of using lead pipe to connect water mains to the water lines within residences in the distribution of community water supplies is common and perhaps even general throughout the United States. It involves no significant risk to the users, since the volume of water involved is small in relation to the requirements of a household. The quantity of lead that is likely to be picked up by water in transit through a short section of lead pipe is small, and it tends to decrease with time because of the gradual deposition of relatively insoluble material on the inside surface of the pipe. Water with highly solvent properties will dissolve some lead from such a pipe on standing. The length of standing and the temperature of the water will influence the final concentration, but the actual quantities of lead will be small. It is partly because of the hot water lines in the house, partly because of the greater surface of exposure and partly because of the longer period of stagnation of the water in certain parts of the system that the use of lead piping in the house is more dangerous than in the connecting line. Initially satisfactory water drawn from taps in established homes in American cities that employ lead connections between the mains and household lines rarely contains more than 0.02 mg. per liter. The lead concentration in new homes or in homes with renewed plumbing is likely to be higher because of the plumbers' practice (not universal) of luting the joints with lead-containing pastes. If it can be shown that the lead content of the water in any specific community is unduly high because of the solvent effects of the water on these connecting lengths of lead pipe, there is no doubt that other methods should be employed.

EARLY MOVEMENT AFTER HEMIPLEGIA

To the Editor:—**A patient aged 72 suddenly developed hemiplegia on the left side; the blood pressure was 180 systolic and 88 diastolic, the heart sounds were regular in rhythm and of good quality and there was no unconsciousness or any other psychic change. In accordance with Beckman's "Treatment in General Practice," after the fourth day I advised passive movements of joints and encouraged the patient to begin active movements. Later, in discussing the case with a colleague (not a consultant), he informed me that even on the tenth day passive or active movements are contraindicated in hemiplegia. I would appreciate your views.**

M.D., Pennsylvania.

ANSWER.—The idea of early institution of both active and passive movement in hemiplegia is relatively recent but is now fairly well established. Nearly all the newer works agree with Beckman that much is to be gained and surely nothing lost if these measures are begun at the earliest possible time.

RESUSCITATION OF INFANTS

To the Editor:—**The mortality of newborn babies at our hospital and in our community is too high. We do not have an infant resuscitator at the hospital. As a member of the staff, I would like to obtain from the proper committee of the American Medical Association literature and statistics on the benefits of an infant resuscitator in a community hospital. Can you recommend any special type of resuscitator?**

M.D., Vermont.

[This query was referred to Dr. Herman N. Bundesen, president of the health department of the city of Chicago, whose reply follows.]

ANSWER.—In 1938 we made a survey of the methods of resuscitation used in Chicago's hospitals. We found that a wide variety of means were employed, including swinging and slapping of the infant, immersion in cold and hot water and the use of various cardiac stimulants, such as epinephrine. At the same time we addressed a letter to leading obstetricians and pediatricians in Chicago, asking for their suggestions as to the best methods of resuscitation. The majority of replies were to the effect that the essential things were, first, clearing of the breathing passages, using the tracheal catheter when necessary; second, keeping the infant warm; third, oxygen; fourth, circulatory stimulants, and, fifth, the use of the mechanical resuscitator. There seemed to be some general agreement that the use of the Drinker type of resuscitator for infants, particularly the premature infant, often resulted in tearing of the air sacs of the lungs. Other positive pressure devices had the same failing. We have had no experience with the more recently developed resuscitators, which furnish both positive and negative pressure but which have automatic controls that shut off the device as soon as the pressure reaches a dangerous point. The obstetricians and pediatricians consulted were in agreement that many of those called on to resuscitate an infant were not familiar with or sufficiently experienced in the use of the tracheal catheter, and that training of all those doing obstetrics to employ the catheter properly is a matter of some importance. A study of our records would indicate that possibly many infants do not survive because of faulty methods of resuscitation which are employed; at least these methods contribute to the hazard. In any event there is need for a great deal of further study of this problem.

SYMMETRICAL ENLARGEMENT OF RIGHT ARM

To the Editor:—**A woman aged 25 has developed a symmetrical enlargement of the right arm during the past year. This arm measures 28 cm. at the biceps, whereas the left arm measures 21 cm. The tissue is nonedematous and apparently is muscular, with visible veins over the anterior biceps near the shoulder. She complains that the right arm tires faster than the left. There is no numbness or tingling of the fingers; the pain sense is normal; the grip is equal in the two hands, and all tendon reflexes are increased, with no difference in the two arms. Her past history is essentially negative, as is her history by systems. The patient is asthenic. The blood pressure is 122 systolic, 80 diastolic. The pulse is normal. The abdomen is negative for masses and tenderness. There are no lymph node enlargements. Patellar clonus is present in both legs. An x-ray examination of the chest is apparently normal. This case resembles nothing with which I am familiar. I have considered the possibility of pseudohypertrophic progressive muscular dystrophy but have not heard of its being unilateral. Would you please give an opinion in this case?**

V. L. Adams, M.D., Myrtle Creek, Ore.

ANSWER.—With the data at hand a definite diagnosis cannot be made. It is unlikely, however, that the condition described is one of pseudohypertrophic progressive muscular dystrophy. The unilateral character, the failure to note dystrophy of the leg muscles and the lack of a familial history are all strong points against this diagnosis.

The history is not clear, moreover, with regard to the extent of the enlargement of the right arm. Measurements are given at the biceps, but it is not clear whether the muscles below the elbow are also involved. With no change in sensation, reflexes or loss of muscular power in the hands, the disease cannot be considered as on a nervous basis with involvement of the peripheral nerves or of the spinal cord. The most likely cause is some obstruction to the vascular or lymph drainage from the arm. This is suggested also by the presence of visible veins over the biceps muscle near the shoulder. The chief cause for such obstruction would be tumor, and the most likely tumor is a sarcoma of the humerus. The same symptoms, however, could be caused by other tumors in and around the shoulder joint or even more centrally placed near the spinal canal. Although the x-ray report of the chest is said to be normal, nothing is mentioned with regard to the roentgenograms of the right shoulder joint or upper arm. These films should be made and possibly a lumbar puncture should be done in order to estimate any blockage in the flow of spinal fluid should the lesion be situated in the spinal canal. If it seems reasonably certain that the muscular tissue is involved, a biopsy of the biceps would be indicated.

PREMENSTRUAL OBSTRUCTION OF NOSTRIL

To the Editor:—A white woman aged 42 complains of obstruction of the right nostril accompanied by severe pain in the right nostril radiating to the right side of the forehead. This occurs during the week preceding menstruation and is relieved by menstruation. She also complains of nervousness in the premenstrual week. A good ear, nose and throat specialist made an examination, roentgenographed her sinuses and told her that she had no sinus trouble or pathologic findings in her nose. Would it be advisable to give roentgen radiation to her ovaries? What other treatment is recommended?

Donald W. Todd, M.D., Guthrie Center, Iowa.

ANSWER.—The nasal symptoms may be due to premenstrual edema such as occurs in other parts of the body such as the brain, the skin and the intestine, where the edema manifests itself as headaches, local swellings and abdominal distention respectively. These symptoms subside spontaneously with the onset of menstruation, but a simple and inexpensive medication to relieve the symptoms before the menses appear is ammonium chloride. The patient is instructed to take 15 grains (1 Gm.) of ammonium chloride (two 7½ grain tablets) after each meal for ten to twelve days preceding the onset of the menstrual flow. During this time she must avoid table salt and all substances and drugs containing sodium, such as sodium bicarbonate. If this medication produces relief it should be repeated for a few months in succession. There is no need to castrate this woman for the premenstrual symptoms, certainly not until ammonium chloride has been used for a few months. (See Greenhill, J. P., and Freed, S. C.: The Electrolyte Therapy of Premenstrual Distress, THE JOURNAL, Aug. 16, 1941, p. 504.)

GLYCOSURIA AND PROBABLE MILD DIABETES

To the Editor:—A physician aged 38 is known to have had a glycosuria for the past fifteen years. The reducing substance in the urine is identified as dextrose by the "osozone and fermentation tests." The fasting blood sugar is and always has been within normal limits and the fasting urine is negative for sugar. However, following the ingestion of a moderately heavy carbohydrate meal a heavy trace or 1 plus sugar spills over in the urine. Repeated sugar metabolism tests have always shown a normal fasting blood sugar with a return to normal at the expiration of two hours. A glycosuria appears with the elevation of the sugar and sometimes persists and sometimes disappears at the second hour. A dextrose tolerance test performed recently is typical of the tests performed over the past fifteen years and gave the following results: after the ingestion of 150 Gm. of dextrose, fasting blood 96 mg. per hundred cubic centimeters of blood, one-half hour 167 mg., one hour 160 mg., two hours 114 mg., three hours 71 mg. The urine is reported as fasting negative, one-half hour trace, one hour 3 plus, two hours 3 plus, three hours negative. Another test following the ingestion of 50 Gm. of dextrose followed by the ingestion of a second 50 Gm. in one-half hour showed fasting blood sugar 97 mg., one-half hour 205 mg., one hour 177 mg. with a slight and heavy trace of sugar in the urine at one-half and one hour. Is there a discrepancy between these two tests? This man has never developed any other clinical signs or symptoms of diabetes mellitus. He eats normally with no attempt at carbohydrate restriction. He feels perfectly well, he leads an active life, and his weight has been maintained constantly at 180 pounds (81.6 Kg.). Should this be considered as an innocent renal glycosuria or a mild diabetes mellitus? What is the prognosis? Is continued observation of the sugar metabolism indicated? Should this man be physically disqualified from securing a commission in the medical corps reserve?

M.D., Oregon.

ANSWER.—The results obtained in the two types of dextrose tolerance tests are roughly comparable in that, although each fails to indicate definitely the presence of diabetes mellitus, in each the values are borderline or suggestive. (It is assumed that the blood sugar values refer to the content of venous blood.) In the first, or standard, type of test the one-half, one and two hour values are just below levels found in mild diabetes mellitus. In the second, or one hour-two dose, test the one hour value of 177 mg. is likewise just at the borderline of levels found in diabetes (Matthews, M. W.; Magath, T. B., and Berkson, Joseph: The One Hour-Two Dose Dextrose Tolerance Test, THE JOURNAL, Oct. 21, 1939, p. 1531).

The condition is not one of renal glycosuria in the strict sense because sugar does not appear in the urine until the blood sugar has risen to levels approaching the normal (average) renal threshold for sugar.

Any person with glycosuria should be under observation for life and should be warned against the danger of obesity. Under sensible conditions of diet, exercise and general hygiene the prognosis in this case is good, provided the physical condition otherwise is sound.

It is recommended that the dextrose tolerance test be repeated, using 100 Gm. of dextrose by mouth and taking venous blood samples fasting and at one half, one, two and three hours. During at least three days prior to the test the patient should eat a diet unrestricted in carbohydrate. At the time of the test the presence of an infection especially with fever or of any nondiabetic condition which might influence the results should be excluded.

Before making a decision as to acceptability for military service, the army examiner would probably insist on a test carried out under standard conditions as outlined. It must be remembered that a person with significant glycosuria, even though not diabetic, may well be rejected because of the nuisance value of such a condition arising from the fact that whenever such a soldier is subjected to physical examination a changing group of army physicians is confronted with the differential diagnosis between harmless glycosuria and diabetes mellitus.

HEMIPLEGIA FOLLOWING INJECTION OF LOCAL ANESTHETIC

To the Editor:—A woman aged 45, who had three teeth extracted from the lower left jaw under local infiltration, noticed within twenty-four hours that the power in her left hand and leg diminished about 50 per cent. She is slightly overweight. The blood pressure is 120 systolic, 80 diastolic. The heart, lungs and urine are normal. A spinal tap and report on the fluid gave normal results in all findings. Do you think that the procaine hydrochloride could have been injected into a vein which got to the motor centers of the brain? If so, how long would it take for the effects to wear off? She is gradually improving and is up and around. Are there any similar cases on record?

M.D., New York.

ANSWER.—The character of the solution used and the technic of injection are not mentioned. If an unnecessarily concentrated solution of epinephrine was injected with the local agent, a rise in blood pressure could result. In consequence, the rupture of a small branch of the right middle cerebral artery might account for the weakness. If a severe "procaine reaction" had occurred, with accompanying disturbance of respiratory or circulatory function, an area in the motor centers on the right side could have suffered sufficient temporary deprivation of oxygen to cause some degeneration of motor cells. Such degeneration might or might not be permanent. Fright or "fainting" may bring about a similar embarrassment to the blood supply. Unless (1) an extreme rise in blood pressure or (2) a severe respiratory or circulatory crisis occurred during or directly following the injection, the motor disturbance described must be looked on as a coincidence and not related to the injection of a local anesthetic agent.

KIRKLAND'S DISEASE

To the Editor:—Recently I had a patient with a clinical picture suggesting the diagnosis of Kirkland's disease (epidemic cervical adenitis). I could get little information about this disease in the usual textbooks of internal medicine. What information I did get I obtained in French's Differential Diagnosis. What is the incubation period of this disease? Have the sulfonamide drugs proved of much value in the treatment? Which one has proved of most value? What type of streptococci is most frequently isolated in throat cultures? I shall appreciate answers to these questions, references to the literature and any other pertinent information about this disease.

William M. Bush, M.D., New York.

ANSWER.—No reference to Kirkland's disease, other than the one mentioned, could be found in recent medical literature, nor were references found in the systems and textbooks of medicine and of otolaryngology consulted, nor on inquiry did several nationally known internists and otolaryngologists know of such an entity. From the information given in French's Differential Diagnosis the disease appears to be an acute infection of the throat, with regional lymphadenitis, to which the person's name who described it has been applied according to an outmoded custom. The statement in the description of the disease implicating streptococci is meaningless, since the kind of streptococci is not specified. Presumably hemolytic streptococci are involved. If so there is no reason to suppose that sulfanilamide or sulfadiazine would not be efficacious in the treatment of this condition.

ALTERNATING CURRENT FOR SHOCK TREATMENT OF PSYCHOSES

To the Editor:—In my hospital in the interior of the Belgian Congo I have an 800 watt, 32 volt electric plant. Would it be possible and reasonably safe, without expensive apparatus, to arrange the shock treatment for psychoses in the manner discussed in the *Journal of the Missouri Medical Association* in the February 1939 issue, page 53?

M.D., Cocoa, Fla.

ANSWER.—Alternating current is required for use in connection with electric shock apparatus. Direct current cannot be used. The wattage and voltage of the electric plant described is sufficient for use with any of the commercial electric shock outfits.

RADIUM FOR OFFICE PRACTICE OF OTOLARYNGOLOGY

To the Editor:—In Queries and Minor Notes in The Journal, October 24, page 658, a reply was made to a communication from Dr. Charles E. Gillespie of Seymour, Ind., asking where he could obtain radium for office practice of otolaryngology. The reply failed to mention the Canadian Radium & Uranium Corporation, 630 Fifth Avenue, New York City, as another available source of such supply.